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ADDRESSES AND ORIGINAL ARTICLES

THE TOXÆMIAS OF PREGNANCY*

BY DAME LOUISE MCILROY, D.B.E., M.D., D.Sc. Glasg., D.Sc. Lond., F.C.O.G., M.R.C.P.

DIRECTOR OF THE OBSTETRICAL AND GYNÆCOLOGICAL UNIT, ROYAL FREE HOSPITAL, LONDON; PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY OF LONDON

I.—CLINICAL AND BIOCHEMICAL INVESTIGATION

WHAT do we understand by the term "toxæmia of pregnancy"? It is difficult to define it, for no specific toxin has been found in connexion with this group of clinical symptoms. We know very little about toxæmia. We know that some alteration takes place in normal pregnancy and that there is an exaggeration of this alteration which is due directly to gestation or to some previous functional derangement in the maternal organism. It is also impossible to make any exact classification of the toxæmias of pregnancy, for their manifestations are varied. The cut-and-dried classification of the text-books is out of date and for teaching purposes we can only describe various symptoms or groups of symptoms. Different symptoms may preponderate at various stages of pregnancy but the ultimate cause is the same in most cases.

If we had a fuller knowledge of the metabolic changes which normally take place in pregnancy we might better appreciate the danger signals. At present we muddle along and occasionally someone throws a beam of light to guide us on our way. Physiologists as a whole, with the exception of Noel Paton, Cathcart, Pembrey, Barcroft, Mellanby, and Mrs. Mellanby, have taken little interest in the study of human metabolic function in pregnancy. What knowledge we have of toxæmia we have had to acquire ourselves with the help of the biochemists in hospital laboratories. To-day, however, as a result of the establishment of antenatal treatment, there is a wealth of material for investigation at hand in our hospitals and clinics. The earlier causes can be recognised the earlier will symptoms be treated and serious complications prevented.

The subject of toxæmia should be freed from old theories. It should be approached from a much wider standpoint. It has been proved of late that the toxic condition is due mainly to deficiencies in nutrition, and in most cases it is associated with some breaking down of the normal functional activities of various digestive and excretory organs.

The significance of the gravity of the patient's condition must necessarily be determined from clinical observation until further definite laboratory tests are obtainable. Our diagnosis is in most cases limited to the investigation of the reaction of the patient to the disease and to the treatment we have carried out successfully or otherwise. Laboratory work has helped in research but the multitude of tests which are devised from time to time are of little practical value unless they can be adapted for clinical use.

Influence of Toxæmia upon Maternal Mortality and Maternal Morbidity

Puerperal sepsis is given first place in all statistical returns of maternal death-rates. In most of these we find that toxæmia comes next in the list. In the Registrar-General's returns for the years 1921–30 this factor is given a high place. But deaths from hæmorrhage, accidents of pregnancy, and abortion owe their origin in a large measure to the malnutrition of the patients as the result of diet deficiencies. In the Royal Free Hospital the maternal death-rate for the years 1921–30 was 2·8 per 1000. If the deaths from toxæmia, obstetric shock, and hæmorrhage were added together they would stand much higher in the causation of death than puerperal sepsis. We know from experience that one of the most important predisposing cases of sepsis is toxæmia or malnutrition and that, therefore, the toll of maternal death-rate from sepsis could be reduced by the improved prophylaxis of toxæmia. The recent investigations of workers on toxæmia have opened up a new era in the prevention and treatment of complications of pregnancy due to malnutrition and diet deficiency. This research will expand and will give promising results as soon as the obstetricians realise that it is on these lines that their attention is to be focused. The maternal mortality-rate will be reduced in time by careful attention to diet deficiency and the consequent malnutrition, just as infant mortality and morbidity have been reduced by expert supervision of nutrition through infant welfare clinics or attention in private practice.

Bingham [1] states that in U.S.A. over 4000 women die annually from toxæmia and that this is to a great extent a preventable disease. In the recent Maternal Mortality Report of New York [2] the high rate of toxæmia is mentioned, and stress is laid on the assumption that the vast majority of deaths from this cause were preventable by medical supervision early in pregnancy. Of 251 patients that died of eclampsia only 63 were regarded as not preventable; 45 per cent. of the infants were stillborn. The highest incidence was amongst negresses who had less supervision and suffered from malnutrition.

Munro Kerr [3] gives the rate in Scotland from hyperemesis gravidarum alone as 4·6 per cent. of the total maternal mortality in 1925–30 and states that the condition is on the increase. In England and Wales this same condition was responsible for 1·7 per cent. of the total maternal death-rate for a similar length of time. Munro Kerr states that there has been no decline in the maternal death-rate from causes such as pre-eclampsia, eclampsia, and chronic nephritis. In the Glasgow Maternity Hospital, toxæmia is responsible for 25·3 per cent. of the total maternal mortality.

MATERNAL MORBIDITY

There is no means of arriving at a comprehensive or general estimate of the end-results of toxæmia of pregnancy. The follow-up researches of various clinics give ample proof of the far-reaching effects of this condition and the disablement from which women suffer as the result of childbearing. We have only to mention renal disease as an example. The chronic ill-health of women who have borne children is a commentary upon the state of our knowledge of the field of obstetrics, and is a responsibility not always recognised by public service authorities who have the care of the health and nutrition of the poorer classes. Something will have to be done about it. We achieve much when we point out that toxæmia is mainly a deficiency disease and make every endeavour to train the future practitioners along these lines. I need not dwell upon the loss of health or

* The Ingleby lectures for 1934, delivered at the University of Birmingham on April 26th and May 3rd. The concluding lecture will appear in a forthcoming issue.

of the ultimate loss of life as the result of child-bearing. This subject has been very ably dealt with by Prof. Blair-Bell,[4] my predecessor in these lectures.

FŒTAL AND INFANT MORTALITY

It is impossible to indicate in any way how far toxic conditions in the mother are responsible for fœtal and neonatal deaths. Until we have a system of notification of all abortions similar to that which we have of viable births, we cannot get much information regarding the cause of the enormous wastage of early fœtal life. Malnutrition of the mother obviously influences malnutrition of the fœtus. There are exceptions to this, however, as we know that badly nourished women produce healthy infants, although at the expense and often grave risk of their own well-being. Abortions, moles, dead- and stillbirths are the consequence in most cases of maternal toxæmia.

In the Royal Free Hospital, during a period of ten years, the highest cause of the stillbirth-rate was toxæmia of the mother. In the neonatal death-rate, 65 per cent. were due to prematurity, which is closely associated with malnutrition of the mother. Premature and badly nourished infants die or survive only with great difficulty. The fatal cases provide statistics for the two great causes of infant mortality in the first month of life—a mortality which still shows no sign of reduction when compared with that of the 11 months, the death-rate of which has been reduced to half in the present century.

Mellanby [5] states that the death-rate of infants for the first week of life is 23·5 per 1000 as compared with 3·3 per 1000 during the first four weeks. If dead and stillbirths are included the rate is 80 per 1000. This mortality is not being reduced and he puts diet deficiencies in the mother as an important cause.

Ætiology of Toxæmia

There are as yet no known specific toxins in pregnancy, although the manifestations are very similar to toxic poisoning from snake venom, phosphorus, &c. The main centre of attack seems to be in the liver and kidneys. A great deal of valuable time has been wasted in discussions upon the best methods of investigation of elusive toxins. We are now getting down to a more rational outlook and have concentrated upon the condition from its metabolic aspect.

The ovum no doubt is the primary ætiological factor, as without it presence there may have been few symptoms of toxæmia previously. A healthy young woman becomes pregnant, she must adapt her physiological functions to the new condition of affairs. The ovum is a newcomer—or as I like to call it, a temporary endocrine organ—and soon makes its presence felt and is insistent upon the proper recognition of the maintenance of its physiological existence. If the ovum fits into its surroundings the pregnancy becomes a harmonious one and all ends happily. The course may not be smooth just at first—for example, if morning sickness is troublesome. It is really this adjustment which is the difficulty. The maternal functions may be slow to adapt themselves to the new conditions. The lodger may make imperious demands and deplete the hostess not only of her food-supply but of her tissue nutrition. Until a settlement is established either member of the ménage may come off the loser. If the adjustment fails the ovum acts as a parasite and tends to poison its hostess by special demands upon her liver. The ovum may itself die because of the depletion of the maternal supply of nutriment. On the other hand, the maternal organism may not be in a condition to take on the responsibilities of motherhood owing to previous toxic pregnancies or to failure in excretory function. The ovum in such a case is the loser. It may die and become expelled, or it may struggle on courageously and survive as an ill-conditioned infant which lives to swell the numbers of the unfit.

THEORIES

The theories as to the ætiology of the toxæmias of pregnancy are very numerous and possibly all have some element of truth. The want of balance between the ovum and the maternal organism leads to a want of balance in the endocrine organs. These glands, especially the pituitary, owing to their secretions and their influence upon reproductive functions play a very great part in maintaining the harmonious relationships between the ovum and the maternal organism. What this exact function may be is not fully known, but our research workers are gradually building up valuable evidence for clinical use. The failure of the placenta to prevent the transmission of toxic substances from or to the ovum plays a considerable part in the toxæmia. Infarctions and other pathological or autolytic changes involving loss of function or separations of the placenta have been shown to be present in cases of toxæmia. The liberation of protein poisons in the maternal circulation may fail to become neutralised, or the placenta may be deficient in its neutralising function by which it acts as a safeguard for the ovum. Failure on the part of the liver to detoxicate injurious substances is also a well-accepted theory. Now we are finding out that this failure in function is due mainly to maternal malnutrition and can be remedied by attention to diet. Defective excretory function as the result of intestinal stasis or chronic nephritis plays a large part in the causation and maintenance of toxæmia. Raised intra-abdominal pressure in the latter third of pregnancy is also a factor. The activity of the trophoblast and blood-borne fragments of chorionic villi are given as a cause in the toxæmia of early pregnancy.

Not only are errors and deficiencies of diet of significance, but over-feeding, by causing embarrassment of the digestive and excretory functions, has to be kept in mind. The influence of nervous and mental changes upon the metabolism is most important. All these factors go to make up the complexities of pregnancy. A harmonious state of equilibrium of the maternal organs and of the embryo in most cases will ensure a normal condition during gestation.

PREDISPOSING CAUSES OF TOXÆMIA

By due attention to these we may avert the onset of an attack or modify its incidence.

Age and parity.—Toxæmia of the hepatic type occurs more frequently in primigravidæ. Of 65 cases in the Royal Free Hospital 57 were primigravidæ, 8 being multiparæ—i.e., a ratio approximately of 7 to 1. In 30 cases of eclampsia the ratio of primigravidæ to multiparæ was 4 to 1. Age does not seem to have a marked influence, although one expects the condition to occur in older women whose tissues react less favourably to the changes associated with pregnancy. Elderly primigravidæ are attacked, but I have seen eclampsia occur in a girl of 14½ years. In multiparæ the renal type is more likely to occur, especially in older women having had frequent pregnancies. Twins also have a predisposing influence upon the incidence of toxæmia.

Season has little or no influence in my experience of cases. Women living in town surroundings with deficient fresh air and sunlight are much more likely to have toxæmia than women in rural areas. This

may account for some of the high incidence of eclampsia in Glasgow.

Disease.—Previous attacks of scarlet fever, diphtheria, rheumatism, and other toxic conditions tend to predispose to the renal type of toxæmia. Intestinal stasis is an important factor which in its turn may be due to pituitary functional defects, want of exercise, and vitamin deficiency.

Condition of ureters.—Pressure upon the ureters attended with dilatation of the renal pelvis is associated with urinary infections of the colon bacillus type. This bacillary infection is found in a considerable number of cases and may influence the onset of toxæmia. Pyelitis is sometimes associated with vomiting. It rather tends to be a sequela of toxæmia as it appears more frequently during the puerperium than in the antenatal period. Due care should always be taken in regard to the aseptic catheterisation of toxæmic patients.

Dietetic Factors

The recent work of Harding and van Wyck [6] on sodium chloride as a factor in the causation of toxæmia is of interest, as these authorities have directed their attention to the dietetic factor in the toxæmias of later pregnancy. They do not think that toxæmia is produced by diets rich in protein or fat. Ketosis will not produce nausea or vomiting in pregnancy. These authors point out the dangers, when protein is withheld from the food, of the consequent drain on the patient's own tissues, and give the result of interesting investigations upon the sodium base in sodium chloride or salt intake. If salt is freely given in the diet of a normal pregnant patient its effects are negligible; if, however, there is a tendency to toxæmia, the condition is intensified. They conclude that salt is the dietetic factor in the production of the toxæmias of later pregnancy. When hypertonic saline was given to normal pregnant patients, in one case, diarrhœa occurred, and headaches and gastro-intestinal disturbances in another. They found that in cases of mild toxæmia there was increased albumin and hypertension together with vomiting, headaches, and epigastric pain. Thus the intake of salt resulted in the intensification of the toxic symptoms. When salt was withdrawn the toxæmia showed marked diminution. Salt also caused retention of fluid in the tissues and consequent œdema. Sweating and venesection are beneficial because of the lowering of the salt content in the tissues. Harding and van Wyck advise glucose solution as a substitute for saline transfusion.

Weight changes in toxæmia.—A considerable amount of recent research has been carried out by Davis,[7] Harding and van Wyck, and Bingham and others upon the significance of an undue increase of weight in pregnancy. This work throws a new light not only upon the prophylaxis of toxæmia but upon its ætiology. A large or sudden increase in weight in the latter part of pregnancy is very signficant of water retention in the tissues. It is, therefore, an earlier clinical sign than œdema. The normal gain in pregnancy should be not greater than 20 lb. (9 k.) except in the case of under-nourished women who have reacted to treatment. Bingham gives this gain at 16 lb. In the first three months there is little gain in weight. Primigravidæ gain less than multiparæ. Heavy women gain more than light, especially towards the later weeks of pregnancy. If the gain is excessive it is due to "occult œdema" and is associated with the sodium chloride intake. It is accompanied not infrequently by albumin in the urine and suggests the presence of toxæmia and of nephritis.

Regulation of diet.—The diet must be regulated and, if necessary, cut down in amount considerably. It is pointed out that at antenatal examinations the routine weighing of patients should be carried out as it is just as important as testing for albumin in the urine. Scales should be in the necessary equipment of every antenatal clinic. Harding and van Wyck point out that the coarsening in features which some women acquire in pregnancy is due to excessive food intake and fluid retention. This disappears after delivery. Stout women should not be allowed to gain more than 2 lb. a month in pregnancy. If this "latent dropsy" is recognised in time following the danger signal of sudden gain in weight, much of the consequences of renal dysfunction will be avoided. It is said that the diminution in eclampsia in Central Europe during the war was not due to a diminished protein intake alone but to reduction in diet as a whole. Bingham, on investigating a series of cases which had excessive monthly gains in weight, found that nearly all his cases of toxæmia were confined to this group. An increase in weight preceded the rise in blood pressure and the appearance of albumin.

As a result of these investigations I have instituted weighing machines in our clinics and the patients are weighed at each visit. In the short time of observation I have seen the value of weight-taking as a gauge of the condition of the patient. When the patient is advised to take exercise in the open air such as a two- or three-mile walk daily up to near the end of pregnancy, the benefit to the ordinary patient is remarkable. She becomes much more cheerful and her gain in weight remains normal. Patients suffering from cardiac or renal complications are, of course, not included in this treatment.

Classification

It is better to wipe out all the intricacies of the text-book labels and start afresh in view of our present-day knowledge of the varieties of toxæmia. Why should hyperemesis gravidarum be given the first position in our books? Is it because of its gravity or because the term is loosely used to denote the vomiting of pregnancy in the early months? Excessive vomiting is a very rare condition in pregnancy, and yet the student is taught to consider it as one of prime importance in obstetrics which may necessitate the termination of pregnancy. Surely this point of view is out of date. There are many cases of vomiting in early pregnancy which are amenable to medical treatment and do not require obstetrical interference. Discussions are rife in regard to the position of the degenerative areas in the hepatic lobules—a central area may indicate one form and a peripheral another form of toxæmia. Does this really matter? We do all we can to prevent our patients reaching the post-mortem room and make our diagnosis at the bedside with the valuable help of the clinical pathologist. The toxæmias of pregnancy with our present knowledge cannot be put into pigeon-holes. It is more than likely that there is very little difference between the various forms except that of degree: the peculiar manifestations depend to a great extent upon the individual patients who are concerned. Symptoms naturally vary in their onset, association, and gravity, and the same form of toxæmia in early pregnancy may be manifested in one case by severe vomiting, whereas in another individual it may show itself later as eclampsia or acute yellow atrophy. As far as we go at present, we can only divide the types into two main groups: (1) hepatic, and (2) renal. It may be that in the future we shall have information at our

disposal which will enable us to classify the toxæmias in more detail with special reference to pituitary and other endocrine dysfunction.

HEPATIC TOXÆMIA

In the hepatic type the patient has been as a rule healthy before the onset of pregnancy and the toxic condition is due to failure on the part of the liver to adjust itself to the new conditions on account of deficiencies of certain substances which are necessary for its function and which are being withheld from the mother or drained away by the ovum for its own nutriment. This type is often acute, such as the fulminating form of eclampsia, acute yellow atrophy or the severe vomiting of early pregnancy. It is of short duration and may end fatally; if recovery does take place it is usually complete. There may, however, be some renal damage which becomes manifest during a subsequent pregnancy. This type is due in the majority of cases to deficiencies in diet or over-feeding.

The liver is concerned with the neutralisation of protein substances, and most investigators believe that if so-called toxins—which we might now call *x* or the unknown quantity—are found they will be of the protein variety. When the liver cells are destroyed by toxic substances, neutralising substances in sufficient amount, such as glucose and calcium, being withheld, the result is a severe condition of toxæmia. The tests for liver function are so varied and controversial that, as clinicians, we have still to rely upon our own observations for a due appreciation of the gravity of the condition. Jaundice with bile in the urine is a marked danger signal in cases of toxæmia. It may not be as delicate a test for the onset of liver damage as certain laboratory tests, but it is of value for clinical purposes. Some take the nitrogen partition of the blood and the excess of urobilin in the urine as a method of diagnosis of hepatic toxæmia. Globulin is said by some to be found in greater quantity than that which occurs in the toxæmia of renal origin. This theory is queried by Cruickshank.[8] Acidosis is closely associated with hepatic toxæmia. The loss of fœtal life is less marked in a hepatic toxæmia as the fœtus is, so to speak, the parasite which drains or poisons its mother. In the renal type the maternal tissues fail to convey sufficient nutriment to the fœtus, and the latter may die at any stage of its existence.

TOXÆMIA OF RENAL ORIGIN

Much has been written on this subject by such investigators as Kellog,[9] Young,[10] Gibberd,[11] Browne and Dodds,[12] Stander and Peckham,[13 14] Evans,[15] and Munro Kerr.[3] In the discussion of the subject at a meeting of the Obstetrical Section of the Royal Society of Medicine in November, 1933,[16] I pointed out the importance of the renal factor, and this point was discussed at greater length by Osman [17] and by Bright Banister [18] at the same meeting.

There is difficulty in the diagnosis of the condition in pregnancy and often it is only on following up the patients for some months or years after a pregnancy complicated with toxæmia that the extent of the renal damage can be estimated. There are two main types of renal damage. There is the type in which the kidney function seems to recover and remains healthy so long as the patient is not exposed to a subsequent pregnancy. If pregnancy which has been called the "acid test of renal function" occurs in these cases, there may be kidney breakdown which simulates toxæmia of the hepatic variety. Some confusion has been caused regarding the name which is to be applied to this type. It has been called the kidney of pregnancy, occult nephritis, low reserve kidney or lowered renal threshold, recurrent toxæmia (Kellog), and albuminuria of pregnancy. I think perhaps the simplest denomination is that of Stander and Peckham—low reserve kidney. The condition is that of an intermittent nephritis or nephrosis without any definite inflammatory changes. It often clears up after the pregnancy is over unless the symptoms have been severe or there have been repeated subsequent pregnancies, when it merges into the chronic nephritis type.

In the section on Nephritis complicating Pregnancy of the New York City Report [3] on Maternal Mortality and Morbidity, 1933, it is stated that it is often impossible to tell clinically the extent of the kidney damage. Stander and Peckham's [13] classification is referred as (*a*) chronic nephritis complicating pregnancy, (*b*) eclampsia and nephritis, and (*c*) low reserve kidney. The report refers to the last type as the Nephritis Toxæmia of pregnancy. The history before and after pregnancy is perhaps clinically the only method available for the diagnosis between the toxæmia of pregnancy and chronic nephritis. If the symptoms occur early in pregnancy the condition is more likely to be the nephritic type. Stander lays stress upon the urea and creatinin tests as an aid to diagnosis. If the urea clearance is below 80 per cent. of the normal and the creatinin excretion below 155 mg. in the first hour, renal damage is present. Previous chronic nephritis with pregnancy superadded is a definite renal lesion due to previous scarlet fever, diphtheria or other toxic disease, and where renal breakdown occurs early in pregnancy.

In the books on nephritis, among which one may mention that of MacLean,[19] I find very little stress placed upon childbirth as a cause of chronic nephritis. Few physicians dwell upon it and yet, from the obstetrician's point of view it is a very serious sequela of pregnancy. Gibberd,[11] especially in several publications of his research upon the follow-up of cases, points to the gravity of the condition. Osman [17] is one of the few physicians who seems to emphasise the necessity for investigating the history of previous pregnancies when dealing with cases of nephritis; he discusses at some length the presence of hypertension and oliguria following toxæmias of pregnancy. All observers upon the late results of this condition refer to the subsequent health disability involved as well as the fatal endings after several years. Young [10] found that when he followed up 91 cases of toxæmia, good health was observed in 58·3 per cent. of these, impaired or poor health in 41·7 per cent. Stander found in the Johns Hopkins Hospital that 42 per cent. of patients die of chronic nephritis within five years. Gibberd found in 41 cases of toxæmia that recovery was complete. When the next pregnancy occurred, albumin was found in 59 per cent. of the cases. He therefore advises induction of labour in all cases of toxæmia if albumin persists for three weeks, there being grave danger of permanent kidney damage if pregnancy is allowed to continue. Cruickshank refers to the advance attained in our knowledge of Bright's disease by the realisation that extrarenal factors play a much more important part in the pathogenesis and symptomatology than was previously supposed. He lays little stress upon the influence of pregnancy but mentions that the toxæmias of pregnancy cause renal degenerative changes which constitute a mixture of nephritis and nephrosis. Cruickshank gives over-eating as a factor in the causation of Bright's disease.

Miss Rodway, in the Obstetrical Unit attached to

the Royal Free Hospital, followed up 50 cases of toxæmia and found the following results:—

There were 34 *primiparæ*.—None of these had any history of previous renal complications. Eighteen had good health, 2 showed chronic nephritis, 9 had raised blood pressure without albuminuria, and 1 had raised blood pressure with albuminuria. There were 4 with headaches and giddiness, but these did not have albuminuria or a raised blood pressure.

There were 16 *multiparæ*.—Seven of these had no history of renal complications at previous pregnancies. Of these 1 had good health, 2 had albuminuria (? chronic nephritis), 2 had raised blood pressure without albuminuria, and 2 had headaches. Nine cases had a history of previous renal complications. Of these 3 had chronic nephritis and 6 had raised blood pressure and general debility but no albuminuria.

TOXÆMIA AND THE TOXÆMIA OF PREGNANCY ASSOCIATED WITH RENAL DAMAGE

It is important not to confine attention to eclampsia alone in dealing with cases of toxæmia but to keep in mind the possibilities of late renal dysfunction, a condition the evidence of which in many cases may be suppressed until a subsequent pregnancy takes place.

Renal damage is a serious complication of pregnancy and becomes more so as subsequent pregnancies occur. The damage to fœtal life is also a consequence of renal damage in the mother. It is difficult to make a differential diagnosis between toxæmia of pregnancy and nephritis, and most clinicians agree that the diagnosis in some cases may have to be deferred until after-results of childbirth have been investigated. It must be remembered that renal damage may follow toxæmia. If the symptoms begin early in pregnancy, if they are insidious in onset, never reaching an acute stage, if childbirth is followed by ill-health, the condition is probably due to serious renal damage.

The following points may be of some use as a general guide:—

	TOXÆMIA	RENAL DAMAGE
Age	Younger women	Older.
Parity	Primigravidæ	Multiparæ.
Previous history.	Good health	Scarlet fever, diphtheria previous pregnancy toxæmia.
Onset	Late pregnancy, sometimes sudden.	Early pregnancy, insidious.
Abortion	Not usual	Frequent.
B.P.	Varies, very high sometimes but not prolonged.	High and prolonged, sometimes no other sign.
Eyes	Few changes	Retinitis.
Jaundice	Serious sign	Rarely present.
Urine	Diminished quantity. High sp. gr. Albumin copious.	Increased quantity. Albumin. Low sp. gr. Casts.
Blood	N.P.N. Lower post-partum. Urea lower than in pregnancy.	Higher post-partum than in pregnancy. Urea higher.
After-effects	Rare unless subsequent pregnancies.	Almost constant.
Convulsions	Eclampsia in severe cases.	Uræmic convulsions.

Toxæmia as a Deficiency Disease

The recent investigations of Maxwell,[20] Mellanby, Lucy Wills,[21] Green Armytage,[22] Theobald,[23] and others have completely changed our ideas upon the causation of toxæmia. We are now working upon much more rational lines than hitherto, and the results of due attention to diet deficiencies will go far to reduce the incidence of toxæmia and moderate all its attendant ills.

In the present lecture I point out the demands of the fœtus and the means of supply at the disposal of the maternal organs. In the next lecture I shall refer to the actual methods of dieting when discussing symptoms and their treatment. As a means of illustrating my remarks I should like, if it will not bore too much, to mention my method of teaching students on this subject. I take as an example the needs of the fœtus. The fœtus goes out to buy its provisions at the retail or placental shop which is in its turn supplied from the wholesale or maternal store. What does the fœtus go out to buy? It demands all the substances which are essential for the maintenance of its normal physiological growth and function. We know something of a number of these substances, such as calcium, and the carbohydrates. Others such as the protein supply still require investigation. The maternal store gives of its reserve supplies and keeps up its stock by constant food intake. If this intake is deficient for the fœtus the supply can still be provided by drawing upon the maternal tissues. If the latter are too much drained however, a serious condition of toxæmia will ensue. If the supply fails the fœtus dies from starvation. But one's clinical experience shows that the mother's welfare is inclined in most cases to be sacrificed to the maintenance of the well-being of her fœtus. It must also be remembered that the placental "shop" may be inadequately equipped or inefficiently managed. Failure of infiltration may take place and harmful substances may not be eliminated or the nutritive supplies may not be delivered.

Calcium together with phosphorus is a very necessary element in fœtal growth, more especially in the latter half of pregnancy when the bony tissues are increasing in bulk. The fœtal blood is of higher calcium content than the maternal, and the figure for the latter is lower in pregnancy than in the non-pregnant state. Stander gives 3·3 mg. per cent. as the normal blood calcium content in pregnancy as contrasted with the non-pregnant content of 10·2 mg. per cent. Theobald refers to the storage in the bones as the maternal "deposit account" and to that in the blood and soft tissues as the "current account." 1·6 g. of calcium is required daily in pregnancy. The fœtus retains 8 g. of calcium during the last four weeks of pregnancy, and Theobald is of the opinion that the diet is insufficient for this supply. If the calcium content of the mother is low, or if she is suffering from vitamin-D deficiency, she will possibly have signs of dental caries or pyorrhœa. In eastern countries osteomalacia may be in evidence. If the fœtus, therefore, does not get its supply from the mother's food it will endeavour to get its calcium from her tissues. If the placenta is inefficient the fœtus may be denied all its nutritive demands and may die. Deficient calcium and vitamins will cause fœtal rickets, maldevelopment of the teeth, and may produce sleeplessness and muscular cramp in the mother. Restlessness on the part of the fœtus is sometimes due to the same cause.

Calcium is eliminated by the urine and fæces. Some years ago I carried out some observations upon the calcium content of menstrual fluid and found that the figure for the menstrual was considerably higher than that for the systemic blood. I also estimated the total intake and excretion of calcium in oöphorectimised animals and found that there was more retention of calcium in these animals than in the normal. It is possible, therefore, that ovarian activity may be in abeyance in pregnancy in order partly to preserve the supply of calcium which is so much needed by the fœtus.

Glycogen is essential for the nutrition of the fœtus and for storage in its liver. The maternal liver may become depleted by the fœtal requirements and acidosis in the mother will be the result. Carbohydrates mainly in the form of glycogen are stored to a greater extent in the fœtal liver than in the adult.

The placental blood-supply obtains its glycogen from the maternal liver and passes it on to the fœtus. Although the mother may be deficient in glycogen the fœtus still demands its supply and will insist upon it at the expense of the maternal tissues. The maternal liver when depleted fails in its function, the alkalinity of the blood is lowered, and acidosis is the result. The mother suffers from sickness and this in its turn aggravates the deficiency. An adequate supply for the mother is kept up by feeding her with barley sugar and other carbohydrates.

Iron is essential for fœtal nutrition and blood formation. Storage of iron and copper takes place in the liver as nature's precaution against a faulty supply in the milk-feeding period of postnatal life. Shortage of iron and other minerals will cause anæmia of the mother, which sometimes is profound. Premature babies are frequently short of iron.

Manganese and *magnesium* are also essentials.

Iodine is necessary. Mellanby and Theobald point out the advantages to be gained by a diet with enhanced iodine content as the average food has a low iodine content. It may be necessary in most cases of maternal deficiencies to supplement the diet by giving these mineral substances directly to the mother. For this reason special methods of treatment are carried out which will be referred to later. Vitamins are essential for the proper assimilation of the various mineral commodities demanded by the fœtus. The diet supply of the mother may also require supplementing by cod-liver oil and other substances. It has to be pointed out although these deficiencies on the part of the maternal supply and the consequent depletion of her tissues may lead to toxæmia and malnutrition of the fœtus, we must remember that toxæmia may also be caused by excessive supply and that results of overfeeding may be just as dangerous as deficiencies of diet.

Mellanby points out that vitamin A is concerned with growth and is stored in the fœtal liver, and that if supply is defective the mother suffers from infective conditions. Vitamin-B deficiency is concerned with abortion and death of the fœtus and vitamin C also is associated with dead births. Vitamin D is essential for the absorption of mineral substances such as calcium. The diet of the mother will be discussed later.

Death of the fœtus occurs if any interference takes place with the supply or transport of its nutritive necessities. A deficiency in the essentials of diet in the mother with the malnutrition which follows from the draining of her tissues by the fœtus may cause fœtal death. Also defects in the delivery of foodstuffs by defects in the placenta owing to degenerative changes or separation and failure in function are all contributory factors towards fœtal death. Abortion may occur from definite known causes, but in the majority of cases which we are asked to treat the cause is unknown. In recurrent abortion administration of corpus luteum and thyroid extract or Antuitrin S in many cases will carry on a pregnancy to term. Dr. Pillman Williams has published an interesting report on the results of the investigation of a number of cases of recurrent abortion sent for treatment to the Royal Free Hospital. She examined the blood of these patients in regard to sugar tolerance and the urine for sugar leak.

Ninety per cent. of the patients showed a lower tolerance for glucose. When the carbohydrate diet was spaced by means of smaller and more frequent meals—30 g. three-hourly—total per diem 150–200 g. —the result was a successful termination of the pregnancy. Dr. Pillman Williams [24] states that a very considerable percentage of cases are related not to any failure of nitrogen metabolism but to gross errors in carbohydrate metabolism, a fact which is not sufficiently appreciated. These patients did not leak sugar on ordinary diet. Their fasting blood-sugars were either normal or only very moderately raised. She considers that the underlying cause of the lowered tolerance for glucose is related to a lack of balance of the ductless glands. Insulin was administered in a few cases with good results.

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LYMPHADENOID TISSUE OF THE UPPER RESPIRATORY TRACT

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THE lymphadenoid tissue at the threshold of the upper respiratory and food passages has been the object of so much surgical interference that the unsolved problem of its physiology may cause anxiety to those who are called upon to perform operations for extirpation of specialised parts of the lympho-epithelial system in this area. These specialised groups are the faucial and the respiratory tonsils.

Recently there appears to have been a greater tendency to examine the subject critically. Such an impression is gained, for example, from Kaiser's book,[1] from the paper by Glover and Joyce Wilson,[2] from the published monograph by Layton [3] and a later paper, and from the report of the chief medical officer of the Ministry of Health for 1931 [4]; and the tonsil problem as it concerns the faucial organ was the subject chosen by Prof. Kahler for the Semon lecture of the University of London in November, 1932.[5] Since then a further article by Layton has

appeared,[6] and Heiberg [7] has published the answers to his circular questionnaire on tonsillectomy results.

The anatomy of the faucial tonsil has been many times accurately described, and its general appearance is familiar to the practitioner from daily routine examination. Superficially, this may seem to be an advantage, but this ease of access has probably led not only medical practitioners but also lay people to speculate on its pathological significance, and its tantalising proximity may have led to its being charged with offences for which it is not altogether responsible.*

The respiratory tonsil is differently placed. It can be studied in situ in the living by the expert in posterior rhinoscopy, and sometimes by anterior rhinoscopy, but its direct examination with the finger should be reserved for the generally anæsthetised. This inaccessibility may not be a disadvantage. In spite of the harm which an untreated respiratory tonsil may cause, I have learnt to modify my enthusiasm against it. I have never been able to feel a similar resentment against the palatine or faucial tonsils. I find it difficult to agree with the recommendation that when a general anæsthetic is given for removal of adenoids the palatine tonsils should also be sacrificed as a matter of routine. Some years ago this dissociation was appreciated in a book by Kerr Love,[8] and he repeats the idea more recently.[9] The fact that it has been advisable, in a few cases, to remove tonsils at a second operation does not justify the sacrifice of an apparently innocent tonsil at an adenoid operation.

The development of the palatine tonsils in the fœtus has been clearly described by Losanow,[10] and that of the respiratory tonsil by W. E. Cooke [11]; but the so-called germ centres or secondary follicles are not seen in either the palatine or the respiratory tonsils until after birth, or, in other words, until the infant is exposed to the infections of the outside world. It is to these germ centres (though such centres are not confined to tonsillar lymphadenoid tissue) that considerable attention has been paid by such observers as Heiberg [12] and Hellman. Neither type of tonsil is a superficial lymphatic gland in the general sense. The palatine tonsil, once thought to possess afferent lymph vessels, has been shown by Amersbach and Schlemmer not to possess them. Its lymphatic capillary system drains centripetally only, and is otherwise a closed system.

Other groups of lymphadenoid tissue may assume considerable size in different parts of the mucosa of the pharynx; such masses are often to be seen on the post-pharyngeal wall after the tonsils (faucial tonsils) and adenoids (respiratory tonsil) have been removed, although the granules from which they have arisen may previously have been invisible to the naked eye. Though similar in most respects, and both showing crypts or folds, the palatine and faucial tonsils differ in their covering epithelium, particularly as seen in the crypts. In the respiratory tonsil this epithelium is ciliated. In the palatine tonsil, mucous glands are never seen to open into the crypts, which are normally emptied by the movements of deglutition at the faucial pillars; whereas in the respiratory tonsil mucous glands open into the depths of the crypts, pouring out secretion which cleanses them and provides mucus to cover the surface of the organ. This is emphasised by Pierce Sturm,[13] and is well shown in the microphotographs of Cooke [11] and C. F. Hill.

* Kaiser states that: "During the last 15 years the frequency of tonsillectomy has greatly increased. It became a matter of common occurrence to have a parent or neighbour rather than the physician decide whether the tonsils should be removed."

THE FUNCTION OF THE LYMPHADENOID TISSUE OF THE PHARYNX

If we go back as far as 1880 we find the idea, now rejected, that the faucial tonsils were concerned somehow with digestion. Some have considered them to be almost useless—a view with which we cannot now agree; others have suggested that they give architectural finish to the faucial arches and perhaps act as pulleys to the musculature of the anterior and posterior pillars. These mechanical ideas are reasonably sound, but there is growing recognition that these organs, in conjunction with the other lymphadenoid tissue in the pharynx, are concerned with protection against microbic invasion.

In the germ centres, which he calls secondary follicles, Hellmann observes a reaction to invasion. Heiberg finds lymphocytes to be destroyed in this site—not produced, as Fleming thought; and Viggo Schmidt,[14] studying the immunising properties of leucocytes, postulates the formation of endolysins in the destruction process. Waldapfel and Grossmann, of Vienna,[15] described the histopathology of tonsils removed during acute tonsillitis, and found polymorphonuclear leucocytes with intracellular cocci in the germ centres; normally, neither are to be found in the lymph follicle. These observers point out that acute tonsillitis, though appearing in several clinical forms, is not a catarrhal infection but a disease of the tonsil as a whole. The phlegmonous appearance is an outstanding feature of the pathological picture; the pharyngeal tonsil may behave in a similar way, or may not be involved in the process at the same time. They believe that their findings confirm Hellman's idea of the lymphatic tissue acting as a protective wall against bacterial and toxic products invading the organism.

An endocrine function was attributed to the tonsils by Voss, who thought they retarded growth; but as Albrecht and Kahler point out, later work failed to support this. Halasz,[16] experimenting with rabbits, has tried, more recently, to revive this idea, but Reichmann [17] finds himself unable to support it.

Yoffey,[18] discussing the lymphocytes, says:—

> "It is quite likely that the lymphocytes are concerned with the active growth processes of childhood and that the lymphoid tissues act as a storehouse of primitive wandering mesenchyme cells to supply the various tissues as they are needed."

This recalls the view expressed by Syk [19] that the lymphocyte [18] is capable of wandering into the pharyngeal lining tissue and performing the nutrition-bearing function of the threpocyte of Carrel [20]; Schmidt found that the number of lymphocytes in the peripheral blood count could be influenced by massaging the tonsils. Finally, Halasz claims that he can relieve attacks of pharyngitis in individuals whose tonsils have been removed (pharyngitis tonsillopriva of Pollatschec), or in old people whose lymphadenoid tissue has atrophied, by injections of albumin-free tonsil extract.

In considering the functions of the lymphadenoid tissue of the upper respiratory tract Barnes [21] has warned us against flights of scientific imagination which are difficult to refute; but the subject is surrounded with difficulties. Schmidt recalls that, at a discussion on the tonsil problem at Kessingen in May, 1923, the debate came to an end with the statement of Schlemmer's hypothesis: The lymphatic

tissue forms an integrant part of the pharyngeal tissue without any separate functions.

CHRONIC TONSILLITIS

When suspicion gathers around the faucial tonsils as a possible source of local or general disease what local evidence can be collected against them? Hypertrophy is by no means evidence of disease in itself. It may, however, give rise to mechanical inconvenience even to the extent of marring speech, interfering with breathing or swallowing, or preventing proper ventilation of the Eustachian orifices by hypertrophy extending into the soft palate. If these sequelæ can be proved to have occurred then the tonsil is mechanically pathological. Some tonsils are so much pedunculated as to appear enlarged and are then frequently, though unjustifiably, condemned on sight. A condition of hypertrophy may be in itself a measure of functional ability, but a condition of great hypertrophy may become a pathological state, in so far as the organ becomes liable to acute attacks of inflammation. Heiberg,[13] calling attention to the process of so-called necrobiosis in the germ centres, saw the possibility of the process being carried to excess, with increase in size of the organ and lengthening of the crypts—a vicious circle leading to vulnerability and disease. Hypertrophy in excess, therefore, may become a pathological state apart from mechanical considerations. Marked diminution in size may also point to a pathological state; it may mean fibrosis, the result of past infections, a greater proportional diminution of the lymphoid tissue and loss of function. Halasz regards this as a state of negative allergy; but it may also be looked upon as the neutral state described in Schmidt's experiments on tonsil massage.

The plica supratonsillaris and the plica pretonsillaris may be sources of embarrassment to a tonsil, causing a sort of phimosis at the outlets of their respective recesses; and Kahler draws attention to the transverse bar or plica of Grünwald. The tonsillar recesses may become sites of stagnation, and therefore the starting points of invasion. We know that we can relieve patients from localised inflammation and save them from immediate tonsillectomy by gently releasing detritus from the pretonsillar recess. It has even been suggested that circumcision of this plica pretonsillaris might be practised. Fibrous scars of the tonsil surface indicate past inflammation, but should not be confused with the plica transversus which appears to divide the tonsil into an upper and lower part.

Much attention has been given to the presence of crypt material as evidence of chronic disease, and in the small proportion of cases where it consists of actual pus—laden with a higher percentage of leucocytes—disease can certainly be diagnosed. Crypt material or tonsil detritus, as a rule, however, may be no more harmful than the epithelial collections to be found under the finger-nail. Such collections should not be confused with the horny plugs of tonsillar keratosis. To reach agreement on the healthy or pathological state of a tonsil is a delicate matter, and tonsillar keratosis may lead to the severance of diplomatic relations with a colleague who may not have attempted to remove those surprisingly adherent horny particles.

Berggren and Hellman[28] have published an elaborate paper of their research on chronic tonsillitis.† They quote Hajek's remark that "the most certain proof of a chronic tonsillitis is always the occurrence of repeated acute attacks." Berggren and Hellman conclude that "chronic tonsillitis with free intervals" is nothing but the frequent recurrence of inflammatory attacks in tonsils whose physiological capacity has been subjected to severe strain. Even the first attack of acute angina therefore may be the real starting point of a chronic process, which may show little in the way of definite clinical signs or symptoms in the tonsil itself, but may form the basis of a general infective condition.

It is not necessary to conclude, however, that occasional acute attacks of tonsillitis in a child will result in permanent crippling of the organ. It is not easy to decide how many such attacks he may be allowed before becoming a candidate for tonsillectomy, but it certainly happens that children pass through such phases and then cease to be troubled by further attacks. According to Hajek's teaching, if a person has three attacks of follicular tonsillitis, with joint pains, in the course of a year or two, the tonsils should come out. Reddening of the faucial pillars does not necessarily signify chronic tonsillitis; it is frequently seen in healthy persons after meals.

Chevalier Jackson in his contribution to the text-book of Jackson and Coates exhibits two coloured illustrations of reddening—which, however, may be pathological; one shows a limited margin of redness, indicating that tonsillectomy will be followed by cure of associated remote disease; in the other the reddening is more diffuse, does not show a limited margin, and is the result of a general pathological condition which will remain unaltered if operation is carried out.

Œdematous infiltration of the tonsil with associated redness and swelling of the palatal arches is a definite indication of disease. Glandular enlargement in the tonsillar chain in the neck may be commonly felt; but the diagnosis of a harmful enlargement may vary with the personal opinion of the observer, especially when the patient is a child. Conservative treatment is therefore advisable. But when a frank glandular enlargement is noticed to persist, tonsillectomy is indicated, no matter what may be the appearances of the tonsil itself. Kaiser describes cervical adenitis in children as a clinical entity, deserving of the name, when glands actually become visible as a result of enlargement. Howarth and Gloyne have shown that such enlargement of glands is not necessarily tuberculous; tubercle is probably a late infection. The value of a blood examination in certain cases must not be lost sight of. I have had some fortunate escapes from performing the operation of tonsillectomy in cases of lymphatic leukæmia.

Opinions appear to vary as regards the value of bacteriological examination of material taken from the surface of the tonsils or from the crypts, either with the platinum loop or by puncture (Ramsay and Pierce). We may look for help to the pathogen selective method, as practised in this country by Cronin Lowe; this method is similar to that used by Solis Cohen in America, and bears a close relationship to the virulence test of Rouge modified by Phillip. Halasz, however, considers the discovery of types of organisms known to produce serious disease as evidence of a pathological condition of the tonsil. Some bacteriologists are not willing to accept the view that Cronin Lowe's method would settle this problem in remote disease of suspected tonsillar origin.

THE TONSIL AS A FACTOR IN REMOTE DISEASE

Lillie and Lyons in America, writing at a time when the responsibility of the tonsil in rheumatic affections was thought to be considerable, recom-

† An abstract by Mr. Thomas Guthrie appeared in the Jour. Laryngol., 1930, xlv., 590.

mended complete removal of the tonsil with plica in every frank case of myositis and arthritis. They expected 89 per cent. of improvements. A history of tonsillitis, though valuable, was not considered to be necessary. Crowe, Watkins and Rotholz, more conservative, did not advise tonsillectomy in stubborn cases of rheumatoid arthritis, but claimed favourable results from the operation in (1) infective arthritis with peri-articular signs, (2) myalgia, and (3) acute polyarthritis (rheumatic fever). Such indictments against the tonsil as a focus of infection in arthritis led Gording and Bjorn-Hansen [23] to seek further information from the blood picture for evidence of an infective process. A. L. Bloomfield remarks, in a late edition of Musser's text-book of medicine:—

> With regard to remote disorders such as arthritis or nephritis the evidence is not conclusive, but such statistics as are available bring no proof that tonsillectomy either prevents or has any special beneficial effect on remote or constitutional disease. In brief, the present practice of indiscriminate removal of tonsils on the slightest excuse or for no reason at all is certainly to be decried. The subject is an important one, since the operation, while not usually difficult, has its hazards as well as its economic complications. Every physician should give the matter serious thought, and one may fairly add "let your conscience be your guide."

Kaiser's work among the children of Rochester, U.S.A., illustrates the need for such serious thought on the subject.

RESULTS OF THE ADENOID OPERATION

We know that the results of operative removal of the respiratory tonsil, in properly selected cases, are brilliant. This applies especially to cases of naso-pharyngeal stagnation, with inadequate nasal ventilation and its evil consequences. It is time, however, to dispel the popular idea that when such an operation gives poor results the adenoid mass has returned and must be removed again. If the operation has been properly carried out such a recurrence is rare indeed. The development of a residual granular naso-pharyngitis should not call for the curette or the adenectome, but for an inquiry into the general condition of the child, and particularly into the condition of the nose; in treating the so-called nasal catarrhs of children, it should be remembered that vasomotor rhinitis is common; if surgical treatment is needed the application of the galvano-cautery point to the relaxed and waterlogged inferior turbinates gives hopeful results. We should look also for hypertrophic rhinitis and deflection of the nasal septum, but should expect to discover a manifest sinusitis more rarely.

Cases of ear disease with intermittent deafness do very well, particularly when they occur in young children. Keen [24] and Kaiser both draw attention to this. In frank inflammatory disease of the middle-ear cleft, however, disappointment after the adenoid operation must be accepted with some resignation, particularly in older children. We need have few illusions on this point now. The hereditary factor too comes out unpleasantly often. It is a delicate matter to decide whether the palatine tonsil should be removed or not, and equal care must be exercised when the size and state of the respiratory tonsil of Luscha is under review. The presence of a respiratory tonsil within normal limits may be more protective to the middle-ear cleft than none at all, particularly when we have to consider the more serious attacks of acute middle-ear disease and their complications.

(References at foot of next column)

ANCYLOSTOMA ANÆMIA AND ITS TREATMENT BY IRON

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ANCYLOSTOMA anæmia is common in Egypt. The cause of the anæmia in this disease being easily removable, the rapidity of blood regeneration can consequently be observed and the response to different drugs in similar groups of cases compared. We therefore considered that this disease would furnish a suitable type of case for the trial of various drugs in the cure of the group of secondary anæmias. Recently we have had the opportunity of carefully studying a group of more than a hundred of these cases.

Ancylostoma anæmia is a hypochromic, microcytic anæmia. In severe cases the number of the red blood-cells per c.mm. is markedly diminished, while the hæmoglobin is reduced to a much greater extent proportionately. In this series of cases the average red cell count was 2,900,000, the hæmoglobin 27·8 per cent., and the colour-index 0·47. The lowest red cell count was 1,400,000, while the hæmoglobin in some cases was as low as 10 per cent. and the colour-index reached 0·15.

Boycott,[1] using the carbon monoxide method of determining the total volume of blood, concluded that in these cases the percentage content does not correspond to the actual deficiency, owing to a considerable increase in the plasma and total volume of the blood; the red cells and hæmoglobin are in a way diluted, so that the total diminution in hæmoglobin is less than would be suggested by a consideration of the hæmoglobin percentage alone, while the total number of red cells is frequently higher than normal, this being compensated for by a secondary fall in the colour-index.

On the whole, as seen from Table I., there is little shortage of hæmoglobin, and this would probably

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account for the mildness of the symptoms frequently associated with the severest grades of anæmia—for example, 10 per cent. of hæmoglobin, as estimated by the Sahli hæmoglobinometer—especially if compared with cases of pernicious anæmia of the same intensity

TABLE I.—*After Boycott (Milroy Lectures, 1911)*

	Hb. %	Total Hb. in g.	Blood volume.	Relative number of red cells in whole blood.
Normal ..	100	400	3000	100
Anc. 1 ..	44	311	5160	102
„ 2 ..	47	357	5520	106
	41	331	5880	
„ 3 ..	49	316	4620	128

of hæmoglobin deficiency. It is an everyday experience to see cases with 20 per cent. of hæmoglobin complaining only of slight dyspepsia or pains in the knees on walking. The fullness of these patients' soft tissues usually gives them a rather plump face and this, associated with their pallor and the blue discoloration of their conjunctivæ, produces a characteristic picture from which ancylostomiasis can be diagnosed almost with certainty even at a distance.

Not infrequently actual œdema is present in sufficient amounts to give quite definite pitting on pressure, especially about the ankles. In some of these œdematous cases where examination of the blood proteins was carried out, it was found that the total protein and the albumin percentage were diminished—sometimes down to 5 and 2·6 per cent. respectively; but this was not constant. Occasionally a marked swelling in the region of the parotids is very apparent, but its exact ætiology is uncertain. In two cases marked spoon-shaped nails were observed, without associated achlorhydria.

In the cases investigated by us the van den Bergh reaction has always been negative, so that there can be no question of hæmolysis; also the reticulocytes have always been less than 1 per cent., usually about 0·5 per cent. at the outset of treatment, normoblasts being found only very exceptionally and then in extremely small numbers. Anisocytosis was common. The average size of the red cells, as estimated by Eve's halometer, was 7·44 μ, varying in different cases from 7·02 μ to 7·66 μ, the normal with this instrument being considered to be 7·6 μ. Not a single case showed the picture of a megalocytic anæmia.

Occult blood was nearly always found in the stools; we could not, however, always exclude other causes for bleeding in the gut apart from the presence of the worms. The lesions produced by the biting apparatus of these worms will almost certainly lead to some ulceration, from which bleeding will continue to take place for some time afterwards. Looss [3] considered that the main food of the parasite was serum and mucosa, any blood being ingested accidentally, and it remains to determine whether the bleeding is sufficient to account for the anæmia. De Langen,[4] carrying out quantitative estimations, has shown that these occult blood reactions are equivalent to 2 or 3 c.cm. of blood per day, a quantity he considers not nearly sufficient to produce such a degree of anæmia, as he failed to cause anæmia in sheep by withdrawing 100 c.cm. of blood weekly. It has, however, been shown by H. S. Wells,[5] working on *Ancylostoma caninum*, that each worm passes 0·84 c.cm. of blood through its digestive tract daily, so that 25 worms would cause a daily loss of about 20 c.cm. If this work be confirmed it would indicate that there is sufficient loss of blood to bring about by itself a severe degree of secondary anæmia.

Whether ancylostoma anæmia is hæmorrhagic of toxic and, if toxic, hypoplastic or hæmolytic, is still a debated point and must for the time being be left an open question. It may be pointed out, however, that in our cases, before treatment, evidence either or hæmolysis or of active regeneration was lacking in the blood and that after treatment had been commenced the blood showed signs of active regeneration—viz., reticulocytosis. A toxin is, however, certainly produced, as shown by the eosinophilia, but this is no proof that it, or a similar body, is the important factor in the production of the anæmia. Hæmolysins have been extracted from the head of the worm but such bodies can be extracted from practically every living organ or tissue. In our cases moderate or high eosinophilia was quite common.

Boycott,[1] in 1903, found that cases with high eosinophilic counts usually had a high total count. He calculated that the increase in the total leucocytes corresponded exactly to the increase in the number of eosinophils, these being added to the normal leucocytes of the blood and any change in the respective percentage of the other cells being merely secondary to the addition of eosinophils. In our cases there was little difference in the total counts, only the group having 20 per cent. or more eosinophils showing any increase (Table II.). There was also little difference

TABLE II

Percentage of cases.	Eosinophils %	Average total leucocytes.
19	20 or more	9943
27	10 to 19	7230
27	5 to 9	7460
27	0 to 4	7528

The maximum recorded was 31 per cent., the average 13¼ per cent.

in the response to treatment between the cases showing high and those showing low eosinophil counts.

Besides the direct action of the worms, toxic or hæmorrhagic, other factors no doubt contribute to the causation of the anæmia. The diet in our cases has generally been very low for years, meat, according to the patients' statements, being partaken of at most once weekly or sometimes as seldom as twice a year. Almost all patients state that they seldom eat uncooked vegetables, these being usually eaten in very much overcooked forms. The staple articles of diet are maize bread and preserved cheese, a diet obviously deficient in iron and vitamins. Pellagra is a frequent complication; this disease, however, will not be considered here.

Gastric juice analysis very rarely revealed achlorhydria, and it was most commonly found in cases complicated by pellagra. That hydrochloric acid deficiency when present plays a rôle in the causation of the anæmia is probable, the cases showing it, as will be seen later, responding more slowly to iron therapy; absorption is apparently impaired because the pH is higher than 3, instead of the normal 1·4 to 1·6.

An interesting clinical feature of these cases of anæmia was the systolic murmur heard over the pulmonary and mitral areas in the majority of cases. It differed from the usual description given of such hæmic bruits in being frequently very harsh and heard well out towards the axilla. It was sometimes much more marked over the apex than over the base, its character changing with any alteration in the position of the patient. Such a murmur usually disappeared or was considerably diminished in intensity when the anæmia had disappeared under treatment.

TREATMENT

First of all, worms were got rid of by administering carbon tetrachloride at weekly intervals until repeated examination of the stools by the floatation method revealed freedom from ova, and further treatment with carbon tetrachloride failed to produce evacuation of any more worms. Usually three or four doses were required to remove all the worms. Hexyl resorcinol was tried in a number of these cases, and the results, which were not satisfactory, have been reported elsewhere.[6]

In some cases, although no ova were found on stool examination, the anæmia and the appearance of the patient were so typical that carbon tetrachloride was administered, and not infrequently large numbers of worms were expelled. This difficulty in demonstrating ova may be due either to the presence of male worms only or to the failure of worms to find in the host a sufficiently nourishing pabulum to lay eggs. Experimental evidence in favour of the latter hypothesis may be found in the observation of Looss [7] who, after infecting himself, found that when his diet was reduced the development of larvæ from his stools was poorer than when milk or cheese was added. This effect may, however, be secondary to a change in the flora; Fleming and Allison have shown that addition of egg-albumin to a diet increases the number of *B. coli* in the stools, while McCoy [8] has shown how the larvæ thrive on bacteria.

The dietetic factor may also help to explain the very low worm loads found in some of the severest cases, the worms abandoning the host if he becomes very anæmic, and if his diet is very poor. Generally cases with only a moderate anæmia (40 to 60 per cent.) harboured only a few worms (up to 20), while the more severe cases of anæmia were frequently associated with higher loads of worms. As pointed out above, this however was not constant. The maximum number of worms found in our cases was 141.

The majority of the worms having been removed, the drug we proposed to try was administered. The red cells and the hæmoglobin were estimated twice weekly, using the Sahli instrument. This instrument, according to Wintrobe and Miller,[9] gives lower readings than most others. According to their calculations a reading of 100 per cent. with it corresponds to 17·2 g. of hæmoglobin per cent., while with the CO method of Haldane, 100 per cent. corresponds to 13·3 g. per cent. and with the Dare instrument to 13·8 g. per cent., so that when the Dare instrument shows 100 per cent., the Sahli will show 80 per cent. That this number should be taken as the normal in the average adult Egyptian is further confirmed by some estimations we carried out on a series of normal Egyptian adult controls with this apparatus. Out of 60 cases, two-thirds varied from 75 to 85 per cent., with a minimum of 64 and a maximum of 93, the average being 78·8 per cent.

These considerations must be remembered later, when the level reached by the hæmoglobin on different methods of treatment is considered, as a level of 80 per cent. (Sahli) was seldom surpassed, this corresponding to 100 per cent. (Haldane); further, when considering the colour-index, an index of 0·8 (Sahli) will be equivalent to 1·0 (Haldane).

We have tried various iron preparations, given alone or in combination with other drugs. The following have been used:

Oral.—Ferrum redactum, Blaud's pill, ferrous chloride, liver.

Parenteral.—Inj. ferri (B.P. given) intravenously and intramuscularly.

To the oral iron, copper, and manganese, vitamin B in large amounts, liver or thyroid were added in different cases.

ORAL IRON

Ferrum redactum.—This was given in cachets after meals. At first, a number of cases had small doses, 0·3 g. t.d.s., but later these were increased to 2 g. t.d.s. No untoward gastro-intestinal symptoms followed these doses, and the patients did not complain of any gastric discomfort or diarrhœa. It must be remembered, however, that these cases were almost universally constipated on admission, any irritating effect of the drug on the intestine merely being sufficient to neutralise this constipation. In certain non-hospital cases, especially women, this large dose had to be reduced owing to the onset of diarrhœa.

In some cases liver was added to the iron with no apparent improvement in the results, while neo-arseno-benzene (914) in moderate weekly doses of 0·15 to 0·45 g. enhanced the hæmopoietic regeneration and enabled the hæmoglobin to reach higher levels, even in cases with a negative Wassermann reaction.

The rapidity of blood regeneration can be seen in Fig. 1 which shows the results in 70 patients who had 2 g. ferrum redactum t.d.s. The count rose from an average of 2,900,000 red cells and 27 per cent. hæmoglobin to 4,900,000 red cells and 64·3 per cent. in five weeks, and reached an average of 5,500,000 red cells and 75 per cent. hæmoglobin in seven weeks.

Five cases showed achlorhydria and, as seen in the chart, showed a much slower response to treatment, rising from 3,280,000 and 38·5 per cent. to 5,100,000 and 54 per cent. in five weeks, reaching only 5,400,000 and 54·5 per cent. in seven weeks. Eleven patients who had only 0·3 to 0·6 g. of ferrum redactum t.d.s. showed a very poor response to treatment, rising from 3,000,000 red cells and 27 per cent. hæmoglobin to 4,100,000 and 41·6 per cent. The increase in red cells is usually accompanied by a moderate reticulocytosis, in our cases not exceeding 10 per cent. This rise in reticulocytes is slow and prolonged, lasting roughly from ten days to two weeks. Fig 7 illustrates the same results in another way. It shows the gain in hæmoglobin, under various forms of treatment.

In a number of cases which became stationary at about 60–70 per cent. hæmoglobin, copper and manganese were added to the iron, according to the following formula: ferr. redact. 2·0 g., pot. permang. 0·025 g., copper sulph. 0·005 g. Ft. cachet 1 t.d.s.

Some were given vitamin B, in the form either of marmite 2 g. t.d.s. or of fresh brewer's yeast 60 g., daily. In others 250 g. of liver by mouth daily, or thyroid extract, were added. On the whole, copper and manganese enabled higher levels to be reached, but, as these patients stayed longer in hospital and were still having the iron all the time, it is possible that this rise was due to the iron alone. Marmite was usually ineffective, while thyroid extract produced an initial slight fall of 5 to 10 per cent. in the hæmoglobin, followed later by a small rise above the former level.

Blaud's pill was given to ten patients in doses of grs. 150 daily, in freshly prepared, easily crushed tablets. No toxic symptoms were observed from these massive doses. The patients treated by this preparation were mostly cases of pellagra with ancylostoma anæmia and consequently, as is usual in such cases, a large proportion of them suffered from achlorhydria, only one of them having any free hydrochloric acid. The results obtained with this method of treatment showed no appreciable difference from a similar group of achlorhydric cases on reduced

iron, the red cells rising from 2,800,000 to 4,300,000 and the hæmoglobin from 35·6 to 62·5 per cent. in six weeks, as can be seen from Fig. 1.

Ferrous chloride.—Four cases had ferrous chloride in a mixture, in doses of 0·3 g. daily. The results were very poor, the red cells and hæmoglobin rising from 3,000,000 and 33 per cent. to 3,950,000 and 47 per cent. in four weeks. In one case, shown in Fig. 2, reduced iron produced a quick response after ferrous chloride had failed to do so in four weeks.

Liver was administered alone in nine cases, in doses of 250 g. a day of fresh lightly cooked liver. The hæmoglobin showed a very poor response, rising from 16 to 37 per cent. in six weeks, this being no more rapid regeneration than would have resulted from mere removal of the worms without any special line of treatment, while the red cells showed a rise from 1,800,000 up to 5,000,000 in a corresponding time (Fig. 3).

In four cases no iron was given after the expulsion of the worms, in order to watch the progress of the case. Practically no improvement was seen after about four weeks' treatment (Fig. 4). If to these four cases we added the eleven cases which had only small doses of iron and which showed a very poor response, it becomes clear that iron in large doses is necessary to bring about a rapid recovery. These results agree with those of other observers (Toshizo Kobayashi [10]). In another eight cases ferrum redactum 2 g. t.d.s. was given, while no attempt was made to evacuate the worms (Fig. 1). Here a very rapid

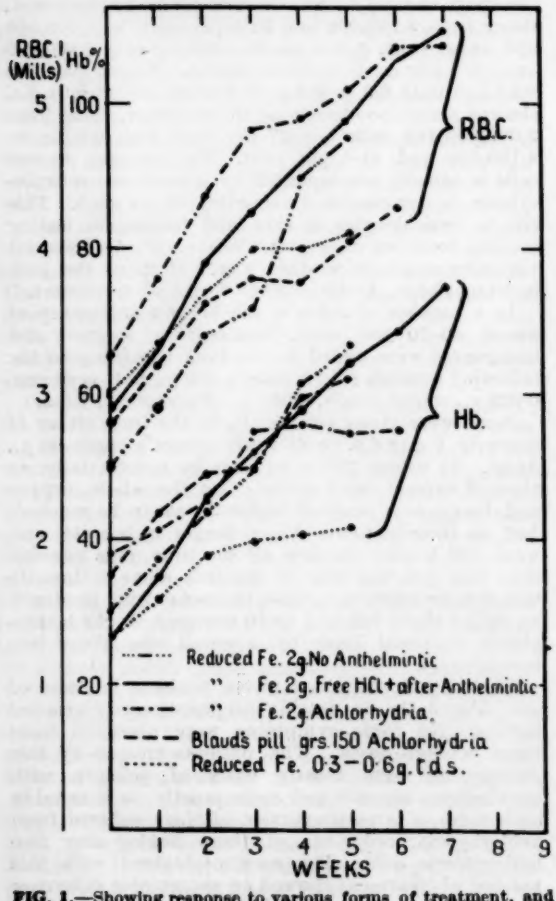

FIG. 1.—Showing response to various forms of treatment, and achlorhydria.

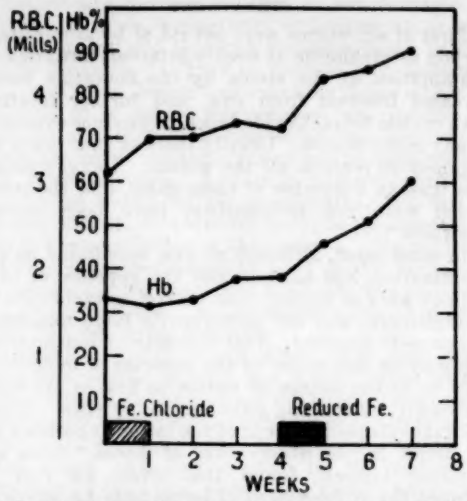

FIG. 2.—Showing weak response to ferrous chloride 0·3 g. daily for four weeks, followed by quick response to reduced iron.

improvement in the blood condition took place, the hæmoglobin reaching 66·7 per cent. in five weeks; this result is in agreement with Keefer and Yang's findings.[11]

The conclusion can therefore be drawn that large doses of iron can correct ancylostoma anæmia even when the patient is still harbouring the worms, but the probability is that such cases, if the iron were discontinued, would relapse to their former condition.

IRON BY INJECTION

By the kindness of Dr. R. S. A. Heathcote, professor of pharmacology in the faculty of medicine of Cairo, we were able to observe the effect of injecting large doses of iron intravenously in rabbits. The injectio ferri (B.P.) was used. It was first added to serum in vitro, no precipitation resulting. It was next injected undiluted into the ear veins of rabbits with no ill-effect even when 100 mg. of iron citrate were employed. Only one of the rabbits collapsed immediately after the injection, but it rapidly recovered and showed no subsequent ill-effect. In our patients we first used it intramuscularly. This method was exceedingly painful, the pain lasting very long after the injection had been completed; we therefore added 1 c.cm. of a 2 per cent. novocain solution to the contents of the ampoule at the time of the injection, and with this addition only very slight pain was experienced after the administration, and this rapidly disappeared.

In another group of patients we injected the drug into the vein daily. Some complained of an immediate feeling of flushing, giddiness, and nausea, but this was very transient and did not occur after the third injection. The ordinary B.P. injectio ferri was used at first, but as the results were poor this was considered to contain an insufficient amount of iron and another preparation was employed containing 50 mg. per c.cm., and of this preparation 1 or 2 c.cm. were given.

On the whole, iron by injection has produced only a very small effect, if any, on these anæmias. Six patients had intravenous injections in doses of 100 mg. daily of iron and ammonium citrate and showed a rise from 2,660,000 red cells to 3,000,000 and from 24·5 per cent. hæmoglobin to 33·5 per cent. in four weeks (Fig. 5). The effect of the intramuscular injections was not very different on the whole; the

red cells rose from 2,900,000 to 3,900,000 and the hæmoglobin from 27 to 49 per cent. in five weeks, this being the average of eight cases who had 100 mg. a day (Fig. 5).

On the other hand, taking the cases individually,

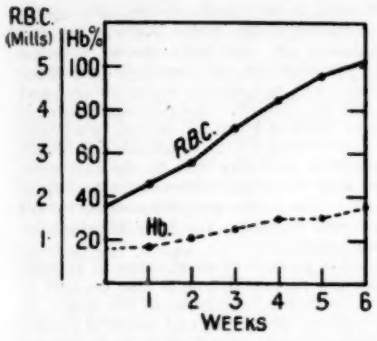

FIG. 3.—Effect of whole liver 250 g. daily on hæmoglobin and red blood-cells.

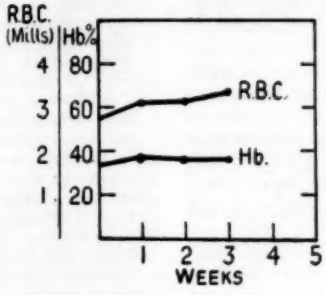

FIG. 4.—Showing no improvement, after removal of worms, in patients who had no iron.

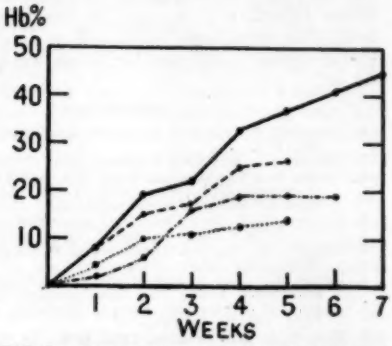

FIG. 7.—Comparative percentage rise of hæmoglobin above original level as compared with Fig. 1.

we found that while the effect taken as a whole is nearly the same, some cases reacted very quickly and markedly to intramuscular medication, while this effect was never observed in those who had the iron intravenously Fig. 6 shows the red cells and hæmoglobin of a patient who was given 50 mg. of iron and ammonium citrate intravenously. The red cells and hæmoglobin, which on admission were 1,300,000 and 11 per cent. respectively, were still 1,700,000 and 24 per cent. after three weeks, although active anthelminthic medication had been given. Intravenous was then replaced by intramuscular injections of the same dose and his red cells and hæmoglobin showed a quick rise to 3,200,000 and 47 per cent. after four weeks. At this point the dose of iron and ammonium citrate given was doubled and the red cells rose in one week to 4,100,000 and the hæmoglobin to 60 per cent. (Fig. 7).

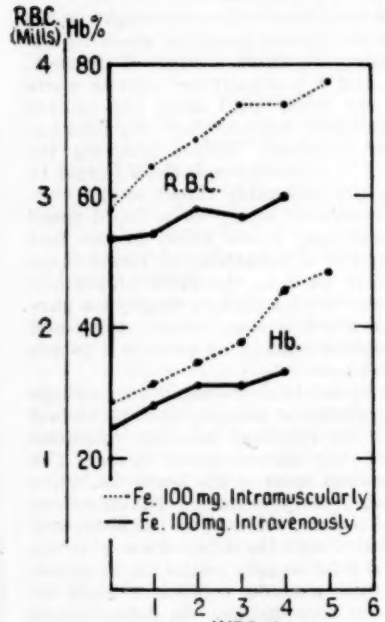

FIG. 5.—Effect of 100 mg. iron and ammonium citrate intramuscularly and intravenously, to same scale as Fig. 1.

This shows that, while iron by injection is as a whole of little use, the intramuscular route is more effective in some cases and in appropriate doses, and may produce quite an appreciable effect. In no case was there any ill-effect on the kidneys or any other organs during this parenteral administration.

CONCLUSIONS

1. Ancylostoma anæmia is considered to be a suitable anæmia in which to observe blood regeneration under different treatment after removal of the cause.

2. Reticulocytes were present in very small numbers before treatment. A rise to about 10 per cent. occurred under iron treatment. Eosinophilia up to 20 per cent. or more was noticed in 19 per cent. of cases, from 10–19 per cent. in another 27 per cent. of cases, from 5–9 per cent. in 27 per cent., and below 5 per cent. in 27 per cent. The maximum was 31 per cent., and the average 13½ per cent. No relation was found between the eosinophilia and the total leucocytic count.

3. The hæmoglobin in the average normal Egyptian

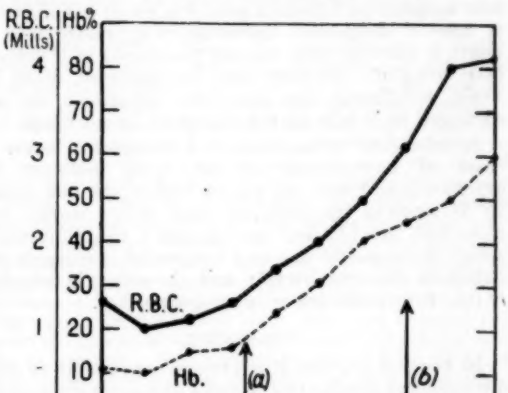

FIG. 6.—Showing effect of change from intravenous to intramuscular iron injections at arrow (a) and of doubling the dose from 50 to 100 mg. intramuscularly at (b).

adult is considered to be about 80 per cent., using the Sahli hæmometer.

4. The response of the red cells and hæmoglobin to reduced iron, Blaud's pill, and ferrous chloride by mouth, together with the effect of addition of liver, yeast, marmite, copper, and manganese in different cases is described and illustrated by charts. It is shown that doses of iron can correct ancylostoma anæmia even when the patient is still harbouring the worms, but that removal of the worms alone produces little or no change on the blood picture.

5. Observations on intravenous injections of the

injectio ferri (B.P.) in rabbits in very high doses showed no toxic manifestations.

6. The effect of 100 mg. daily of injectio ferri, i.e., three times the official dose, is discussed. The results are considered not to be satisfactory, although in certain cases intramuscular administration was sometimes effective. A case is described where intramuscular injections produced a good response after intravenous injections for three weeks had failed to do so.

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SUBARACHNOID HÆMORRHAGE IN GENERAL PRACTICE*

BY J. N. GALE, M.D. Sheff.

SUBARACHNOID hæmorrhage must be recognised in the patient's home. Unlike many other neurological conditions it does not allow of the patient being sent into hospital with perfect safety to await examination. A missed diagnosis, therefore, may easily lead to death; whereas with correct treatment in a suitable case complete recovery may be expected, since the brain substance has not been ploughed up and damaged as it is in an intracerebral hæmorrhage.

Spontaneous subarachnoid hæmorrhage refers to cases of hæmorrhage in the space between the arachnoid and the pia mater which are not caused by violence in the ordinary sense of the word. The cases fall roughly into two groups: the younger, in which it is usually due to a congenital aneurysm or a defect in the vessel wall; and the older, in which it is due to arterial disease or degeneration.

DIAGNOSIS

In general practice it is always convenient to have a condensed version of the signs and symptoms of the less severe cases in one's mind, and my own mental picture is as follows. The patient is suddenly seized with an intense headache and feels as if something has snapped in the head. He reels about and may become unconscious for a short time. He always has a severe headache over the occipital or more rarely the frontal area, with stiffness of the neck and usually photophobia. At the risk of being dogmatic I venture to say the headache of instantaneous onset with transient giddiness or unconsciousness, and stiffness of the neck and photophobia demand lumbar puncture as certainly as hæmaturia demands a cystoscopy. I may mention also that photophobia has been present in every case with which I have been associated and in every attack in a patient who has had five attacks. Although Barber and Taylor [1] and Lescher [2] have all noted this symptom previously, there is no mention of it in the classical monograph of Symonds,[3] and since it seems to depend on the irritation of the extravasated blood, as does the stiffness of the neck, it appears reasonable to expect to find it in nearly every case.

Other signs which seem to be due to the *irritation of the extravasated blood* are Kernig's sign, pains in the body and limbs due to stimulation of the nerve-roots, massive albuminuria due to irritation of the centre in the floor of the fourth ventricle—and not to any renal lesion—and a temperature of 99° to 100° F. This temperature is similar to that seen in cases of ruptured ectopic gestation and is likewise due to the effect of the extravasated blood.

The *occipital headache* is probably due to the increased intracranial pressure and is usually relieved immediately by a lumbar puncture. The other symptoms of increased pressure such as cerebral irritation may be followed by coma, and death may supervene.

Korsakoff's syndrome is present in most cases in greater or less degree. Although this syndrome is also present in alcoholic polyneuritis, infective conditions of the brain, in progressive paralysis, senile dementia, and cerebral contusions, it has not, I believe, been observed in intracerebral hæmorrhage. It may be pointed out that where the prognosis in many of these conditions is bad, in subarachnoid hæmorrhage it is relatively good.

Papilladema and *hæmorrhages in the fundus* are recorded in a number of cases, and Doubler and Marlow [4] have cut transverse and longitudinal sections of the optic nerve which showed that the blood has forced its way along the optic nerve sheath into the eyeball, which may account for the pain in the eye of which some patients complain. In my own cases the discs have been normal, though photophobia and reddening of the conjunctiva were marked.

These signs and symptoms only add weight to the definite indication for lumbar puncture given by the headache of instantaneous onset, stiffness of the neck, and photophobia, and it is usually not wise to waste time by looking for them until after the lumbar puncture, since the latter will complete the information necessary for diagnosis, besides relieving the patient's headache. The cerebro-spinal fluid must be received into two (or preferably three) sterile test-tubes, since an accidental injury to a blood-vessel during the puncture may cause blood in the first test-tube only, whereas in subarachnoid hæmorrhage it is present in all of them in the same proportion. The colour may vary from a pinkish tinge to a pure blood colour. The blood is soon broken down and after a time the original colour may yield to a golden yellow or brownish tinge.

A large and rapidly fatal subarachnoid hæmorrhage is indistinguishable except at autopsy from a cerebral hæmorrhage which has ruptured into the ventricles or externally into the subarachnoid space. The history of instantaneous onset of the headache, when it can be obtained, is very helpful. The transient unconsciousness with pain, stiffness of the neck, and photophobia, combined with the detailed examination of the cerebro-spinal fluid, usually settles the diagnosis immediately and will exclude conditions such as meningitis and polio-encephalitis. In hæmorrhagic encephalitis lethargica the history is different, and the temperature is usually higher and more sustained; the absence of abdominal reflexes and the ocular symptoms help to differentiate the condition and the subsequent course is not the same.

PROGNOSIS

Excluding the cases where the hole in the artery is large and the patient dies in a few hours, the prognosis is very different in the older group due to arterio-sclerosis and in the younger group due to congenital defect or aneurysm, the mortality being nearly twice as high in the older group. From what

* Based on a paper read before the Derby Medical Society.

I have been able to read it seems that the importance of blood pressure in prognosis has been strangely neglected. While it is not possible to observe the condition of the cerebral arteries during life, it is possible to obtain with ease some measure of the strain to which they are subjected in the living subject. The blood pressure will give a definite answer to one-half of the problem of prognosis. Added to this we know already that in cases of spontaneous subarachnoid hæmorrhage the vessel wall is diseased or defective in some way, and this gives the blood pressure an added importance in prognosis and treatment. In most of the younger group of cases there is no permanent elevation of the blood pressure, and the hæmorrhage is due to some defect in the vessel wall or to a tiny aneurysm. In this group the immediate prognosis is relatively good, since with proper treatment and avoidance of anything which tends to raise the blood pressure the patient usually gets well; there is a great tendency to recurrence, as many as five or six attacks having been reported without a fatal termination. It is usually advisable to have a Wassermann test. Hall [5] has reported hæmorrhage from syphilitic arteritis in a man of 28.

In the older group due to arterial degeneration, with or without increased blood pressure, the prognosis is not so good, since the fragility of the vessel wall is usually progressive and the raised blood pressure throws a severe strain on a vessel which is gradually getting weaker. As a somewhat arbitrary rule it appears from the few cases in which the blood pressure has been recorded that a blood pressure of 200 mm. Hg or over is of very grave significance, although there is no certain safety even if the blood pressure is less, because the vessel wall may be unduly fragile.

TREATMENT

In every case there are certain natural factors which tend to cause a cessation of the hæmorrhage. These are the clotting of the blood at the bleeding point and the rise of pressure in the cerebro-spinal fluid. Treatment should take into consideration four factors: (1) the blood pressure; (2) repair of the vessel wall; (3) pressure of cerebro-spinal fluid; and (4) prevention of further attacks.

Blood pressure.—There is possibly a momentary fall in blood pressure due to collapse of the patient at the moment of onset; but almost immediately there is a reflex increase of pressure in order to maintain the cerebral circulation. If the case is seen soon after onset when the bleeding is probably in progress the patient should be rigidly recumbent, the neck must not be kinked, nor should he have any tight clothing round his neck. The rise of intracranial pressure due to the lightest pressure on the jugular vein of one side, as seen in Queckenstedt's test, is instantaneous and gives a very obvious reason for these directions. After performing diagnostic lumbar puncture and finding the pressure of the cerebro-spinal fluid is not unduly high, it is probably advisable to perform a venesection, if the patient has a high blood pressure. It has been argued that venesection is dangerous owing to the risk of reducing the venous blood pressure in the cerebral veins below the intracranial pressure of the cerebro-spinal fluid, but the necessity for venesection can be judged after consideration of the pressure of the cerebro-spinal fluid and also considering the degree of hyperpiesis. I have myself frequently performed venesection and withdrawn 15–20 ounces of blood in cases of apoplexy without any harmful results, although here also there is the same theoretical objection to an immediate reduction of the blood pressure.

There can, at least, be no doubt that it is supremely important to keep the blood pressure as low as possible during convalescence. To guard against the further attacks which are so likely to follow, it is essential to lessen the strain on the vessel wall which is known to be defective. When diphtheria has attacked the heart it is customary to maintain the patient in a rigidly recumbent attitude for some weeks; and I suppose we all keep our cases of thrombophlebitis in bed for six weeks with the limb at rest. I am confident that it is far more important to keep cases of subarachnoid hæmorrhage in bed and rigidly recumbent for at least six weeks, when the rent in the vessel wall should be firmly healed. Purves-Stewart [6] has suggested ligation of the common carotid artery on one side, but many patients would demand some record of success before submitting to a rather drastic operation, and to me personally their attitude seems not unreasonable.

Repair of vessel wall.—Anything which tends to increase the rate of clotting of the blood will tend to limit the hæmorrhage and prevent further leaking. Since local application is impossible the hæmostatics given by intravenous or intramuscular injection may be tried. There is abundant clinical and experimental evidence to show that Hæmoplastin, Coagulen, and Thromboplastin have an immediate and profound effect in increasing the coagulability of the blood, and they should therefore be injected at the earliest possible moment together with some form of calcium.

Pressure of cerebro-spinal fluid.—Indiscriminate and repeated lumbar puncture is not advisable in the earlier stages, since the sudden lowering of the intracranial pressure has resulted in renewed hæmorrhage and death of the patient. Ingvar, quoted by Symonds,[3] has summarised the position as follows:—

> "In subarachnoid hæmorrhage there are two stages to be observed:—First: When the hæmorrhage is actually proceeding the raised intracranial pressure has a protective value as tending to reduce the rate of leakage and so promote coagulation. In this stage, therefore, though it may be necessary to remove a small amount of fluid for diagnosis, therapeutic drainage is contra-indicated—with one very important exception, which is when the rise of intracranial pressure threatens life. In such cases the risk of death by compression outweighs the risk of further hæmorrhage, and lumbar puncture with free drainage may offer the only hope of saving life. In the earliest stages of subarachnoid hæmorrhage therefore, the indications for therapeutic lumbar puncture are the signs of dangerous increase of intracranial pressure especially if these be progressing. In the second stage, when the bleeding has ceased the pains may undoubtedly be relieved by repeated lumbar puncture. The patient should be lying down, a manometer should be used, and the pressure of the cerebro-spinal fluid should not be allowed to fall below 100 mm."

The figures of 100 mm. seems a rather low level for the pressure of the cerebro-spinal fluid and in many cases so big a drop in pressure will not be needed. In this connexion it is interesting to note the type of headache which one can expect to relieve at once by means of lumbar puncture.

The patients usually complain of pain in the occipital region combined with a feeling of intense pressure or numbness. Sometimes they describe the pressure as feeling "like a block of ice" or "being held in a vice," pointing to the occipital region. This headache is not relieved by anything I have tried, excluding morphia, which relieves it for a time. Some time ago I performed four lumbar punctures in five weeks for headaches of this type with instant relief to all. One case was subarachnoid hæmorrhage, one apoplexy, and two were what I believe to be mild cases of encephalitis lethargica, since they occurred along with six or seven others in the course of a small epidemic in which two patients died.

The occipital headache may, of course, be replaced by a temporary headache of a frontal nature, but the knowledge that the lumbar puncture will relieve the occipital headache is often enough to persuade the patient to submit to the lumbar puncture which will also furnish the physician with such valuable information.

Prevention of further attacks.—As there is a great liability to subsequent attacks which are usually brought on by some temporary elevation of the blood pressure, sudden and violent exertion or emotion should be avoided. Constipation with consequent straining is dangerous, as also is repeated bending down. The blood pressure, if raised, must receive very careful attention with prolonged treatment, and it should be observed at least every month for the first year and every two months for the next two years, or oftener if it shows a tendency to rise.

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PRESBYACUSIS AND ITS TREATMENT

BY MACLEOD YEARSLEY, F.R.C.S. Eng.

THAT the infirmities of age include the affliction of deafness has long been common knowledge. Polixenes, when he, in disguise, chides his son for failing to consult him in the choice of a wife ("Winter's Tale"), refers to it in

> Is not your father grown incapable
> Of reasonable affairs? Is he not stupid
> With age and altering rheums? Can he speak? Hear?
> Know man from man?

and other allusions to age deafness abound in literature. But presbyacusis has been too long accepted, unquestioning, as the inevitable concomitant of "the sere, the yellow leaf," and few ageing persons know that the condition can be improved and to a great extent prevented.

Senile deafness, or presbyacusis, appears in two varieties, according to whether the degenerative changes occur in the middle or internal ear. The latter may be distinguished as the true presbyacusis, but I doubt whether the degenerative process in the middle ear is not always present in some degree. The changes in the internal ear have been considered to be due to a degeneration of the cochlear ganglion cells and the hair cells of the organ of Corti, although Mayer held that the cause lay in an "ossification" of the basilar membrane. Pathological investigations, however, are practically non-existent—at least I have met with none, and a confrère to whom I applied has found the literature equally sterile. There is one remarkable and, to my mind significant, case, published by L. Katz (*Arch. f. Ohrenheilk.*, May, 1906), of what that observer considered to be an instance of otosclerosis in a cat. The animal died at the extreme feline age of 23 years, having gradually become deaf during the last years of its life. Katz found rarefying osteitis of the bone surrounding the labyrinth, with partial degeneration and atrophy of the cochlear nerve and organ of Corti. Since the stapes was not ankylosed and the entire annular ligament was intact, otosclerosis is negatived, and the changes were much more probably due to age.

Systematic pathological research into the condition of both middle and internal ears of elderly and aged people is greatly needed. The very nature of the deafness ensures a plentiful supply of the necessary material.

The age at which presbyacusis first shows itself is usually between 55 and 65, but in all probability it commences at about 50, sometimes even earlier. Like all other forms of nerve deafness, it is characterised by a lowering of the upper tone limit of hearing and a shortening of the bone conduction; probably the former precedes the latter. It would appear that, seeing the little use we make of the hearing acuity for very high tones in modern civilisation, it is these extreme upper notes that would be the first to go, and this is borne out by experience. Bezold, in 1894, examined the hearing in 200 ears of patients over 50 years of age. He found that in the decades following that from the 50th to the 60th years there is not only a successive decrease in the number of those with nearly normal hearing, but there is also a successive increase in the degree of deafness. About the same period, Zwaardemaker deduced from his own investigations a *presbyacusis* law, as follows:

(1) The compass of the human hearing contracts half an octave at its upper limit to the period of advanced old age. The average is a major fourth, the maximum being a major fifth.

(2) During advanced age proper, the contraction of the scale increases.

(3) The upper limit is in youth at *e*7, in advanced age at *a*6 (average values). The extreme lower limit for normal hearing in old people is *g*6.

About ten years later Pflimlin examined 140 cases over 60 years of age in the Freiburg ear clinic, and found the most frequent condition in advanced age to be nerve deafness, or an affection of the labyrinth, perception for high tones suffering most, and bone conduction being considerably reduced. He considered that Zwaardemaker's law holds good for 60 years and over, and that a part of the cases of deafness may be regarded as an increase of physiological presbyacusis, whilst a relatively frequent cause of deafness in advanced age is fixation of the stapes. In this latter statement I am of opinion that Pflimlin was confusing true presbyacusis with deafness due to changes in the middle ear, probably of arthritic nature, and due to the effect of toxæmia, most likely of intestinal origin. In a work upon "Otosclerosis" recently published, I have suggested a serial connexion between certain forms of congenital deaf-birth, otosclerosis, certain anomalous cases of insidious chronic deafness occurring in middle age, and true presbyacusis, and if this connexion proves to be a definitely established fact it will open up a new field in the treatment of chronic and progressive forms of deafness. Unfortunately, I repeat, research is wanting in the pathological anatomy of presbyacusis. One thing is, however, very significant—the association between presbyacusis and intestinal toxæmia. My experience of the past 35 years suggests that if people paid more attention to what they ate and drank, and to the necessity of regular evacuations of the bowels (to the number of two a day), they would delay their degenerative processes and preserve their hearing much longer. It is certain that unless old people with early presbyacusis pull themselves up and take more care of their digestive apparatus from the points of view of a more appropriate diet and less consumption of what are called, with doubtful veracity, the "good things of life," their commencing deafness will assuredly go from bad to worse. This

is probably why the treatment of presbyacusis is considered as unsatisfactory and its prognosis usually pronounced to be hopeless. Until about seven years ago, my advice to persons suffering from true presbyacusis was directed to certain radical alterations as to mode of life and the avoidance of too much local treatment, and, in a large proportion of cases, the advice proved unpalatable. But an intimate acquaintance with the electrophonoïde method of Zünd-Burguet in the treatment of other forms of deafness led me to try it in presbyacusis. Since then I have used it in 31 cases with success, especially in the earlier stages of the deafness. The accompanying Table affords a brief record of these cases as to sex, age, duration of deafness, and the state of the hearing for the voice, spoken or whispered, before and after treatment, the distance being given in inches. These cases speak for themselves. Tuning-fork tests are not given, because, for practical purposes, improvement in hearing for the voice in conversation and social intercourse is the aim with which these patients sought treatment. Four of them stated that if they could hear the calls at bridge better they would be perfectly satisfied. In one case the improvement caused a domestic upheaval, as the patient began to hear disparaging things said about him by his family at table.

No.	Sex.	Age.	Duration of deafness.	Hearing before and after treatment.	
				Before.	After.
1	M.	60	2 years.	84	168
2	F.	71	3 ,,	W. 15	W. 180
3	F.	73	5 ,,	29	106
4	M.	68	10 ,,	35	69
5	F.	61	5 ,,	120	180
6	F.	61	?	43	180
7	M.	61	5 years.	52	144
8	M.	77	7 ,,	17	60
9*	F.	61	1½ ,,	W. 120	W. 240
10†	M.	49	3 ,,	36	180‡
11	M.	76	10 ,,	36	84
12*	F.	61	1 year.	W. 36	W. 180
13	F.	72	2–3 years.	36	84
14†	M.	56	5 ,,	W. 72	W. 144
15	M.	68	8 ,,	24	120
16	F.	64	?	14	72‡
17	F.	68	5 years.	60	132
18	M.	62	2–3 ,,	60	204
19*	M.	56	1 year.	W. 84	W. 240
20	F.	70	?	120	204
21	F.	66	10 years.	36	144
22	M.	66	6 ,,	120	144
23	M.	75	10 ,,	84	240
24	F.	68	10 ,,	24	180
25	F.	64	2 ,,	60	180
26	F.	60	2–3 ,,	144	240
27	M.	74	7 ,,	24	180‡
28	F.	75	3–4 ,,	96	240
29	F.	79	?	72	240
30†	M.	53	2–3 years.	120	240
31	F.	69	2 ,,	W. 16	240

W. = whispered voice. ‡ 15 treatments only.

Nos. 9, 12, and 19, marked with an asterisk, were early cases. Three patients, all men (marked with a dagger), were prematurely aged. Of these, Nos. 10 and 14 died at 52 and 58 respectively from apoplexy. Both were hard livers, hard eaters and drinkers. No. 30 was prematurely aged by hard work. All three had passed many years in the tropics. No. 23 was a careful man, abstemious without bigotry. He retained his improved hearing almost to his death, at 81 years.

The degeneration of the nerve arrangements of the organ of hearing is due largely to the fact that its blood-supply is one of the circulatory back-waters, or "dead-ends," in the body. The cochlear artery is small, and with a lessened force to pump the blood through it the organ it supplies must suffer in nutrition. The effect of the electrophonoïde method on the ear is the ideal means for dealing with such a condition. The massage by sound, which is its essential basis, and which is the normal stimulus for the ear, causes an active hyperæmia throughout the whole organ, resulting in an increased nutrition which greatly improves the cochlear tissues. Even when, after the lapse of some time, the improvement wears off, a further short course of the treatment will restore it. Of course, if the patient can be, at the same time, induced to reconsider his diet and other indulgencies, and keep his bowels in order, the effect is very much better.

THE PAIN OF HERPES ZOSTER TREATED WITH PITUITRIN

By Francis H. Gillett, M.B. Camb.

Dramatic results with the injection of pituitrin for the treatment of herpes zoster have been reported in the American and continental medical press during the last few years, and considering the remarkable relief which sometimes is given to the patient by these injections, it is surprising that the treatment receives so little attention. The report of the following selected cases may help to stimulate further inquiry.

Case 1.—A male aged 40. Came to me on July 19th, 1932, suffering from herpes zoster, the rash covering the two segments below the left nipple. The pain had been present for ten days, and he described it as agonising. Analgesics including morphia had scarcely given him any relief. I gave him 1 c.cm. of pituitrin, and even before the injection was completed he told me that the pain had quite disappeared. A few minutes later he turned very white and had a sudden forceful opening of his bowels. The pain was completely relieved, and 17 hours elapsed before it recommenced and then it became steadily worse. Nineteen hours after the first injection I gave a second 1 c.cm. of pituitrin, and the pain disappeared about one minute later. On July 21st he returned to me with a dull ache present, and a third injection made him quite comfortable for two days. On July 23rd the ache having returned I gave him a further 1 c.cm. of pituitrin. This was followed by the most acute pain, which lasted for about five minutes, and then ceased as abruptly as it had commenced. I saw him again on July 28th, and except for the irritation of the drying scabs he was absolutely comfortable.

Case 2.—A woman aged 61. Pain in the right flank had commenced on Sept. 6th, 1932, and had gradually become worse. I saw her for the first time on the 11th, when the spots had just appeared extending in a band 1½ inches deep, from the spine to the pubes. The pain she described as excruciating, and she had been taking two aspirin tablets every two hours without relief. I gave her 10 units of pituitrin at 10.15 A.M. on Sept. 11th into her deltoid and about one minute later she was freed from all pain in a most dramatic fashion. After a few minutes the bowels were opened, and then the patient went to sleep "for the first time for three days." Seventeen hours after this injection the pain returned, gradually becoming worse, and 4½ hours later I gave her a second injection, which relieved the pain even before the needle was withdrawn. During the next few days she felt what she described as "numbed pain"; she suffered from flatulence and difficulty in opening her bowels. Further injections were given on Sept. 15th and 16th in order to relieve this discomfort, but only a transient relief for a few hours was obtained, and aspirin was found to be sufficient.

Case 3.—A man, aged 63, received complete relief from the pain associated with herpes zoster after I gave him 1 c.cm. pituitrin on July 26th, 1932. The injection made him feel queer and faint. The pain came on again very severely 10 days later but was relieved promptly by

0·5 c.cm. pituitrin without any ill effects. Six weeks later he reported that he had had no return of the pain.

Sidlick [1] in 1930 described 4 cases from a series of 54 patients suffering from herpes zoster treated with pituitrin. These four suffered agonising pain and the treatment was most efficient. Niles [2] in 1932 also described a series of 16 cases treated with pituitrin, and considers that the most brilliant results were obtained in the very early cases and that the course of the disease was shortened by about 2½ days. He found that the severe pain was usually rapidly relieved.

I have found that the injection of pituitrin is an uncertain and by no means an infallible treatment. It appears to act most dramatically when the pain is most intense. I can at present offer no explanation of why this should be so, but the treatment is a valuable asset to the practitioner in his attempt to relieve a patient from the pain accompanying herpes zoster.

Eastbourne.

EVIPAN SODIUM AS AN ANÆSTHETIC IN PULMONARY TUBERCULOSIS

By M. Lask, M.B. Leeds

MEDICAL OFFICER, PRESTON HALL SANATORIUM, AYLESFORD, KENT; AND

J. H. Crawford, M.B. Leeds

ASSISTANT MEDICAL OFFICER AT THE SANATORIUM

In view of the considerable interest which has been aroused in the use of evipan sodium as a general anæsthetic, it may be of some interest to record our experience in the use of this anæsthetic in pulmonary tuberculosis. During the past four months we have administered evipan sodium in 85 cases of pulmonary tuberculosis, all of whom had open lesions and were drawn from all three classes of Group B (London County Council classification). The cases can be grouped as follows:—

(1) Dental extractions	35 cases
(2) Minor operations	20 cases
(3) Operations involving direct surgical treatment of pulmonary tuberculosis—viz., apicolysis, partial thoracoplasty, section of pleural adhesions, and bronchoscopy for drainage of cavities (8 cases)	30 cases

Of these, 25 cases in Groups 1 and 2, representing 29 per cent. of the total series (or 45 per cent. of the two groups alone) were undergoing artificial pneumothorax treatment and had already attained satisfactory collapses, while the remainder in these two groups were ambulant, non-febrile cases. In Group 3, 11 cases, representing 13 per cent. of the total series (or 37 per cent. of this group alone) had more than three lobes affected with cavitation at one or both apices.

No premedication was given for the patients in Groups 1 and 2, but those in Group 3 were all given the Hoffmann-La Roche preparation containing omnopon gr. ⅓ and scopolamine gr. 1/150, one hour before operation. In this group the full dose of evipan sodium (1 g. dissolved in 10·5 c.cm. sterile water) was injected, but for Groups 1 and 2—i.e., for dental extractions and minor operations—quantities varying from 4·5 to 10 c.cm. were injected.

As cases of pulmonary tuberculosis in any stage are notoriously bad risks from the point of view of inhalation anæsthesia, a safe and satisfactory alternative is desirable. As a result of these observations, our conclusion is that evipan sodium is the anæsthetic of choice for all minor surgical conditions in pulmonary tuberculosis whenever local anæsthetisation is impracticable. In our series there was only one case which occasioned any anxiety, that of a man aged 55, who stopped breathing for four minutes in the course of a dental extraction. Artificial respiration, the injection of coramine, and the application of hot fomentations to the back of the neck were entirely successful in restoring function. This conclusion is maintained despite the fact that there was always a fall of some 20 per cent. in the blood pressure and that evipan is a respiratory depressant,[1] two factors that would seem to mitigate against its use in pulmonary tuberculosis.

Our observations on the cases comprising Group 3 of this series point to the fact that evipan sodium has a wide field of usefulness in thoracic surgery. It can be used alone where excessive nervousness on the part of the patient precludes the use of a local anæsthetic, or in combination with local anæsthesia for operations such as rib resection, cauterisation of pleural adhesions, and partial or localised thoracoplasty. No ill-effects were observed after the use of evipan sodium; in fact, there was a remarkable unanimity of opinion among the patients operated upon as to the well-marked feeling of freshness experienced on coming round from the anæsthetic. For the larger operations of apicolysis and thoracoplasty we have, at Preston Hall, been using a combination of regional anæsthesia combined with very mild general narcosis with the Tiegal-Henle positive pressure ether apparatus, and it would seem that this is the most satisfactory form of anæsthesia whenever a thoracoplasty is to be performed in one or two stages, as by this method the dangers and post-operative risks peculiar to thoracoplasty are to a large extent obviated.

It may be noted that eight cases of bronchoscopy are included under Group 3. Although anæsthesia was quite satisfactory in each of these cases, we cannot advise the routine use of evipan for this operation, as we consider that in the hands of properly trained operators, bronchoscopy is a safe procedure and should not require general anæsthesia.

Many workers [2] with evipan anæsthesia have stated that for minor surgical operations such as dental extractions, a small dose of evipan (2·5—5 c.cm.) is sufficient. This is not in accordance with our experience; we find that out of a total of 55 minor operations (dental extractions, removal of ingrowing toe-nails, opening of whitlows, abscesses, &c.) in phthisical patients, 51, representing 93 of the total, required a minimum of 4·5 c.cm. for satisfactory anæsthesia. We do not wish to commit ourselves to an explanation of this phenomenon and suggest that further work is necessary to elucidate this matter. It is possible that the explanation lies in the fact that these patients have been subjected to toxic influences over such long periods of time, that they may have acquired a certain degree of tolerance to any respiratory depressant. We should like to hear the views of other workers on this point.

The technique of injection used was that advocated by Bayer Products Ltd., but after experimenting with different rates of injection we have come to the conclusion that this is not a point of paramount importance.

[1] Sidlick, D. M.: Arch. Dermat. and Syph., 1930, xxii., 91.
[2] Niles, H. D.: New York State Jour. Med., 1932, xxxii., 773.

SUMMARY

(1) An analysis of 85 cases of pulmonary tuberculosis in which evipan sodium was used as an intravenous anæsthetic is presented. (2) The use of evipan anæsthesia in pulmonary tuberculosis has proved to be entirely safe. (3) It does not, however, effectively take the place of mild inhalation anæsthesia for major thoracic operations. (4) Generally speaking, though not always, the dosage of evipan required for minor operations in phthisical patients seems to be higher than that required to produce an equivalent degree of anæsthesia in non-phthisical subjects.

We are indebted to Dr. J. B. McDougall, the medical director, for his kind permission to carry out this investigation.

REFERENCES

1. Jarman, R., and Abel, A. L.: THE LANCET, 1934, i., 510.
2. Jarman and Abel: Ibid., 1933, ii., 18.

REVIEWS AND NOTICES OF BOOKS

Swimming Bath Water Purification

Second edition. By F. WILKINSON, M.Inst.C.E., M.I.Mech.E., and F. J. FORTY, B.Sc., A.M.Inst.C.E. London: The Contractors' Record Ltd. 1934. Pp. 262. 12*s.* 6*d.*

THE authors of this timely book are respectively borough engineer of Willesden and deputy borough engineer of Ealing. Swimming has for some years been an increasingly popular exercise, and if a succession of hot summers may be expected the demands for good baths will still increase. The best design and arrangement of a swimming bath has, in the past, hardly been part of the normal stock of knowledge of either borough engineers or medical officers, and many good baths would have been better had such a book as this been available. As Prof. H. R. Kenwood remarks in his foreword, the public health side of the subject is given in this book the prominent place which its importance warrants.

Reference is made to the pioneer work of Dr. F. W. Alexander who chlorinated the water of the swimming baths in the borough of Poplar 25 years ago, and to the early investigation of the bacterial flora of a small swimming bath by Dr. J. Graham Forbes, who found among 4000 organisms per c.cm. of the bath water *Staph. pyog. albus*, *S. epiderm. albus*, and members of the proteus group (from skin contamination), *Strept. salivar.* and others (from saliva), and *B. coli*, *B. pyocyan.*, *Strept. fæcal.*, and proteus (from fæcal contamination)—a formidable but easily explained group of organisms, highly suggestive of the occasional presence of others still less desirable. The authors cite this and other evidence which makes it "abundantly clear that swimming bath water which has been subjected to use by many bathers, without any attempt to ameliorate its condition is objectionable not only from the most obvious—namely, the æsthetic standpoint—but also from the points of view of sheer danger to life through risk of drowning (opacity of the water) and the risk of transmission of diseases, mild, serious, or fatal."

Can these grave risks be avoided in a simple, safe, and economical manner? The authors' reply is "Definitely yes," and they go on to describe the processes of incomplete purification as used by Alexander at Poplar and the later processes of continuous purification—straining, aeration, coagulation, filtration, and chlorination—giving sufficient detail to make the book useful to bath superintendents. Processes of sterilisation other than chlorination—ultra-violet rays, catadyn silver, ozone—are lightly touched on. They have not received the full trial which chlorination has and may be considered as in the experimental stage, although worthy of consideration by those who are starting new baths, and who are willing to give more skilled attention to the sterilisation of the water than is required by a chlorination plant. These agents have the advantage of not leaving an irritant substance in the water.

The arrangement of the bath and the control of bathers are dealt with in a way which shows that the authors have practical knowledge of their subject. The book can be recommended without hesitation to all those who may have to give advice to public bodies or private owners on the management of swimming baths, as well as to those who have to inspect such baths and report on the suitability of lay-out and the efficiency of working.

The Ancestry of the Long-Lived

By RAYMOND PEARL and RUTH DEWITT PEARL. Baltimore: Johns Hopkins Press; London: Humphrey Milford, Oxford University Press. 1934. Pp. 168. 13*s.* 6*d.*

THIS publication sets out in book form an interesting study of the inheritance factor in duration of life, an account of which was originally issued by Prof. Pearl and his daughter in *Human Biology* (February, 1934), and was discussed in a leading article in our own columns (1934, i., 745). One or two sections have now been expanded, more especially those dealing with the group of persons who were chosen to serve as the standard of comparison with the longeval. The rules of selection that governed the composition of this group certainly need very careful consideration, for it is upon the adequacy of this standard that depends the validity of the evidence favouring the extra longevity experienced by the ancestry of the long-lived group. The development of their case for inheritance does not, as the authors admit, make easy reading, but it is presented in as clear and interesting fashion as possible.

The Doctor and His Patients

By ALBERT KRECKE. London: Kegan Paul, Trench, Trübner and Co. 1934. Pp. 301. 10*s.* 6*d.*

THIS book is a series of essays by the late Dr. Albert Krecke, which in the original German ran through several editions. The subjects are well chosen for the purpose of bringing before the practitioner the pros and cons of many fundamental questions which must arise in the course of his professional life. The real value of plain speaking to certain patients, and the practical necessity of deciding what the patient and the patient's relations should be told, are discussed, and wise advice is given on how to deal with the fear of cancer among the public. Other chapters touch on the conduct of practice, giving counsel as to the proper attitude of the doctor towards his colleagues, and towards patients, while the way to maintain just relations between the consultant and the family doctor, and the principles involved in the payment of doctor by doctor are set out. In another chapter warning is given as to the responsibilities which the young

doctor has to undertake, and in yet another we have suggestive reflections upon the situations which follow unsuccessful operations. Albert Krecke conducted an excellent private clinic for nearly 20 years in Munich; his annual reports were read by the majority of German surgeons, and he was a prominent contributor for a long period to the *Münchener medizinische Wochenschrift*. His obiter dicta were very sagacious, and here many of them will be found.

Injection Treatment in General Practice

By M. L. GUJRAL, M.B. Punjab, M.R.C.P. Lond. Publishers: Practical Medicine, Nai Sarak, Delhi, India. 1934. Pp. 209. Rupees 6.

THIS book attempts within a very small space to cover the technique of all branches of injection treatment. It ranges from the application of the method to surgical conditions such as hernia, hæmorrhoids, and varicose veins on the one hand, to vaccine and non-specific protein therapy on the other. To achieve such an object in so slender a volume would require, in addition to knowledge of the facts, a measure of considered judgment in interpreting and assessing them. The author has not shown evidence of such critical judgment. The book, apart from being sketchy, contains much information which is not accurate, much advice that could not safely be followed, and what must be almost a record number of typographical errors for a twentieth century medical work. It cannot in any sense be regarded as a trustworthy or sure guide for the practitioner.

British Journal of Surgery

THE July issue (vol. xxii., No. 85) contains the following papers: The Examination of Fresh Tissues by the Wet-film Method, by Leonard S. Dudgeon and N. R. Barrett (London). Through experience gained in examining 1000 cases a high degree of accuracy in diagnosis has been attained. As the process takes a few minutes only its value in operating room technique is obvious.—Reconstruction of the Forearm after Loss of the Radius, by R. Watson Jones (Liverpool). Following a previous diaphysectomy involving almost the whole length of the radius, the distal end of the ulna was implanted into the small distal fragment of radius, thus constructing a single forearm bone. The function and cosmetic result are excellent.—Localised Hypertrophic Enteritis as a Cause of Intestinal Obstruction, by W. A. Jackman (Bristol). Two cases are described. The onset in each instance was sudden, and produced an "acute abdomen." Recovery followed resection and ileo-cæcostomy.—Gastro-jejunal Ulceration, by A. James Walton (London). Based on 79 cases operated on by the author. The conclusions are that gastro-jejunal ulceration is almost always a sequel of gastro-enterostomy performed for duodenal or pyloric ulceration, and should be treated by partial gastrectomy. Its incidence is not high enough to preclude the use of gastro-enterostomy as the operation of choice for duodenal ulceration.—Protrusio Acetabuli (Central Luxation), by F. Campbell Golding (London). The condition is defined as a "disease process and not an entity." Ten cases are described. In the ætiology disturbance of growth of the Y-shaped cartilage and rheumatic processes are considered of most importance.—Bone-Graft for Non-union of the Carpal Scaphoid, by Gordon Murray (Toronto). The method is used for old fractures showing no evidence of union, and has given good results with complete restoration of function.—X Ray Investigation of the Upper Right Quadrant, by the late W. H. Dickson (Toronto). A comprehensive account of the investigation of gall-bladder disease and of its differential diagnosis by the use of dyes and of opaque meal and enema.—Changes in the Blood-Sugar Level associated with Surgical Operations, by A. G. Weddell and H. E. D. Gale (London). Pre-operative anxiety did not seem to be a factor in raising the blood-sugar level, nor did the length of the anæsthesia. The nature of the operation did influence it. Post-operative glucose salines had no specific effect; the glucose was absorbed and was probably useful as a food.—Diverticula of the Vermiform Appendix, by Harold C. Edwards (London). Ten cases are described, seven of which had been associated with symptoms of appendicitis. The literature is reviewed.—Acute Enteric Intussusception in an Adult, caused by a Lipoma, by R. I. Poston (Oldham). Excision of a gangrenous part of small intestine was successfully performed. The mechanics of intussusception are discussed.—Cysts of the External Cartilage of the Knee with Erosion of the Head of the Tibia, by H. A. T. Fairbank and Eric I. Lloyd (London). Both cases followed injury, and were cured by excision of the cartilage with its cysts.—Adolescent Kyphosis, by J. M. Edelstein (Johannesburg). Eight cases are reported of a progressive type of deformity resulting from disturbances of normal vertebral ossification.—Enterogenous Cysts, by W. E. A. Hughes-Jones (Melbourne). Ætiology, site and structure, and various forms of treatment are discussed.—The Origin and Evolution of Colostomy, by Tilson Dinnick (London). A historical survey.—The Relation of the Extrinsic Nerves to the Functional Activity of the Œsophagus, by G. C. Knight (Buckston Browne Surgical Research Farm). Observations on the vagal and sympathetic nerve supplies to the œsophagus of the cat.—The Growth of Periosteum in Long Bones, by W. Turner Warwick and Philip Wiles (London). A record of experiments carried out on rabbits at the Courtauld Institute of Biochemistry. The *interstitial* growth of periosteum was proved, and the relation of this particular type of growth to the limiting and modelling of bone is suggested.—Shorter notes on cases are also included.

REPORTS AND ANALYSES

NORWEGIAN CHEESE

NORWEGIAN DAIRIES EXPORT CORPORATION, OSLO, NORWAY. SOLE AGENTS: MESSRS. W. C. LAMING AND CO., LTD., 29, TOOLEY STREET, LONDON BRIDGE, S.E.1

THIS cheese is stated to be made from goat and cow's milk; it is described on the package itself as a whey cheese made in Norway. The makers claim that all indigestible milk solids are extracted from the cheese in process of manufacture; it should therefore follow, they state, that "the tissue-building material is available without the indigestible casein content, and that it should be of considerable benefit to most invalids." The Norwegian Official Research Bureau for Dairy Products furnish the following analysis:—

Water	13·41%
Dry matter	86·59%
Containing—	
Ash	4·75%
Fat	29·61%
Protein (mainly milk albumin)	10·36%
Sugar (milk sugar)	41·85%

Our analysis of the cheese agrees closely with that given by the Research Bureau, the figures found being the following:—

Water	12·04%
Dry matter	87·06%
Containing—	
Ash	4·33%
Fat	32·00%
Protein	9·00%
Sugar (lactose hydrate)	41·10%

The cheese is of the soft, crustless variety, and of a somewhat dark yellow colour. The percentage of water is unusually low, and the product should thus prove economical in use as well as nutritious. The high content of milk sugar—an unusual ingredient in cheese—will be noted.

THE LANCET

LONDON: SATURDAY, AUGUST 11, 1934

A QUESTION OF NEEDS

THE object of unemployment insurance is to tide people over short periods when work is unobtainable or unobtained. Substantial contributions are made by the worker himself (as well as by the employer and the State) and having paid his share of the premiums he is legally entitled to definite benefits, for himself and his dependants, over a definite number of months. These benefits are not assessed according to his needs; they vary according to the funds available for division. In its new Unemployment Act the Government has put these funds on a self-contained or business basis: hence, if unemployment decreases the benefits should soon become more generous; if, on the other hand, the situation gets worse they will be reduced. The present rates of benefit, which include 2*s*. a week for a child, are not defended as adequate for long periods when there are no other resources; they are meant to prevent temporary destitution till other work is found by the breadwinner. The larger problem of unemployment concerns those who have exhausted their right to insurance benefit and those who have never been covered by any contributory scheme. Under part II. of the Act workers who have fallen out of insurance, and those (e.g., the lower-paid black-coated and the agricultural) who are outside insurance altogether, will come under the care of a new body, the Unemployment Assistance Board. The chairman of this Board is Sir HENRY BETTERTON, under whose able guidance, as Minister of Labour, the Bill went through the House of Commons, and its task is to provide for the vast body of unemployed *according to their needs*. It will be seen at once that the distinction between the two parts of the Act is fundamental. Part I. governs the distribution to insured workers of the benefits to which they are statutorily entitled. Part II. established a new body, now under Sir HENRY'S control, which must see that no one, because of unemployment, lacks the necessities of life. The scale of the Board's relief need bear no relation to the scale of ordinary unemployment insurance as we have known it; it is to be dictated solely by what is necessary to "promote the welfare" of the unemployed.

In our correspondence columns last week a distinguished group of physiologists and physicians [1]—whose authority has since been enhanced by the adherence of Dr. A. K. CHALMERS, Prof. J. J. R. MACLEOD, F.R.S., and Prof. LEONARD PARSONS—urged that the Board should now proceed to lay down a scale of needs in accordance with physiological and other requirements. Their experience, they said, leads them to believe that there will be "grave danger of widespread physical deterioration, especially among the growing generation, if a considerable section of the population, obliged for reasons beyond its control to depend for maintenance on public funds, is unable to purchase sufficient food and other necessaries for healthy existence." "We suggest," they added, "that a standard of needs which will fulfil the intention of the Act can only properly be arrived at in consultation with medical and other expert opinion qualified to estimate the minimum requirements of healthy living and the cost of satisfying them for families of various sizes." A similar suggestion is made in more detail in a memorandum submitted to the Board by Miss ELEANOR RATHBONE on behalf of the Children's Minimum Campaign Committee.[2] By Ministerial statements the Board is committed to adopt scales which provide for healthy subsistence, and the Committee points out that the basis of these scales "should be publicly known and capable of being publicly defended by reference to scientific data established in conference with experts." So far as food is concerned it proposes that the Board should use the statement of basic requirements [3] finally agreed upon last spring by representatives of the Ministry of Health and British Medical Association committees on nutrition—translated into terms of cost according to the calculations in the B.M.A. report. The standardisation of needs other than food must rest rather on practical experience than on scientific theory, but the estimates used in the Social Survey of Merseyside (reviewed in our columns last week) and of London would serve as a starting point. For rent the best rule, it is thought, would be to allow for the rent actually paid, unless this was evidently extravagant and cheaper accommodation was available elsewhere in the neighbourhood.

According to none of the current estimates can the needs of large families be met out of ordinary insurance benefit, and when the Unemployment Bill was debated in the House of Commons many members of all parties supported an amendment which would have bound the Unemployment Assistance Board to pay at least 3*s*. for every child. This and other amendments were opposed by the Ministry on the ground that the Board was already under contract to meet all the needs (other than medical) of the unemployed, and that this contract implied something more than merely providing for their physical requirements. Such an obligation, interpreted according to the B.M.A. report, would mean a big advance on the standards hitherto adopted by insurance or poor-law authorities, and the question is whether the Board

[1] Sir Farquhar Buzzard, Prof. S. J. Cowell, Prof. J. B. S. Haldane, F.R.S., Mr. Leslie Harris, D.Sc., Sir Gowland Hopkins, P.R.S., Prof. J. C. G. Ledingham, F.R.S., Dr. G. C. M. M'Gonigle, Prof. Charles McNeil, Prof. V. H. Mottram, Dr. J. Boyd Orr, F.R.S., Dr. Charles Porter, and Sir Humphry Rolleston.

[2] Memorandum on the Scale of Needs. Submitted on behalf of the Committee by Miss Eleanor Rathbone, M.P. July, 1934. Obtainable from the Committee, Room 116, Thames House, Millbank, London, S.W.1. Pp. 16. 4*d*.

[3] THE LANCET, 1934, i., 1098.

will really be prepared to go so far. It will be tempted in the first place to accept the argument that scales constructed by sociologists and physiologists are negligible because in fact large numbers of people manage to exist on less. But as the Committee says, "if the Board's scale is not to be based on any scientifically worked out standard of needs, what will it be based on? It will in any case be challenged by reference to such a standard." Again, it may be felt that the Board's rates of relief must not exceed the ordinary unemployment insurance benefit; but this thesis can scarcely be upheld, since the Board is primarily concerned with the victims of prolonged unemployment; moreover, it is specifically empowered to supplement benefit paid under part I. of the Act in cases where this is insufficient even for brief periods out of work. The real difficulty facing the Board is that the sum required to meet the needs, as nowadays understood, of a family of human beings will sometimes be greater than the earnings of the head of the household when employed. It is a cardinal principle that relief must never equal (let alone exceed) wages; on the other hand, it is obvious that relief should vary with the size of the family, whereas wages do not. In these circumstances it is suggested that school meals or milk or other assistance in kind provided for the children by public assistance or charity should not be reckoned in the family resources.

On the general question whether the nation can afford more adequate methods of relief there will no doubt be more than one opinion. Plain assurances, however, have been given about the scope of the Bill which has now become law, and Miss RATHBONE and her colleagues are right in saying that these assurances, if implemented, "foreshadow a bold, far-sighted and generous policy, which will revolutionise the standard of assistance to the unemployed in this country."

THE SEX HORMONES

Prof. BUTENANDT, who has played a distinguished part in advancing chemical knowledge of the sex hormones, reviews the present position in a lecture lately given in Vienna.[1] In the course of it he expresses his own point of view very clearly and definitely in the following terms:—

"The chemical investigation of hormones begins with attempts to prepare the hormone under investigation in the form of a chemically pure, simple substance. The solution of this problem is bound up with the existence of a suitable starting material and of a quantitative test for the hormone, and its goal is reached when the hormone is obtained in well-formed crystals the simple nature of which can be settled beyond doubt with the help of modern physical and chemical methods. When the preparation of a pure hormone is accomplished, then the necessary preliminary conditions are satisfied for determining by a thorough physiological and pharmacological analysis of a simple substance its function in the organism. The problem of the number of hormones taking part in the course of a physiological process can only be solved in this way. From these investigations are then obtained the exact indications for the therapeutic application of the hormone on the basis of an exact measured dosage."

From physiological investigations it has been established that sexual processes are primarily controlled by the hormones of the anterior hypophysis, which is in the position of governor, and by the gonadal hormones, elaborated by the testis and ovary. The hormonal nature of the control by the anterior hypophysis is established, but we are still in the stage of dealing with "factors" characterised by their physiological action and far from the ideal of "well-formed crystals." BERNHARD ZONDEK has postulated the existence of two such gonadotropic factors, prolan A and prolan B, promoting, respectively, ripening of ovarian follicles and their luteinisation, but the existence of two separate substances is not yet settled beyond doubt. A third "accessory" or "synergic" factor has also been postulated, which activates the other two, and the disappearance of which entails the decay of sexual function associated with senility. The relation of the physiologically active materials excreted in urine of pregnancy to the materials extracted directly from the anterior hypophysis is still a matter of some discussion, but the evidence is, on the whole, in favour of the urinary factors being different and derived from the placenta during pregnancy. The chemistry of these substances, allied as they are to the proteins, is extremely difficult, and it may be long before the criteria suggested by BUTENANDT can be approached. It is at least necessary to proceed with caution and a due realisation of our ignorance in using these materials in physiological experiments. In the past not a few physiological investigations have been made with materials which were later recognised to be mixtures in varying proportions of substances with different characteristic properties.

It is clear, however, that the function of the hormones of the anterior hypophysis, whatever their number, is that of stimulating the gonads to activity and excretion of their specific hormones. In the case of these latter hormones the position is more satisfactory. The isolation of œstrin (œstrone) and of the testicular hormone, now named androsterone, will be familiar. Chemical investigation has shown that there is a family of natural products containing the *cyclo*pentenophenanthrene ring-system. As Prof. DODDS lucidly explained in his Goulstonian lectures[2] a few months ago, the sterols, the bile-acids, pregnandiol, androsterone, dehydroandrosterone, œstrone, and equilenin form a series in which one member may, on paper, be converted into the next by processes of successively shortening the sterol side-chain, replacing it by a ketonic group, and dehydrogenating; and the suggestion is obvious that such a metabolic chain exists in the body itself. Of equal interest from the chemotherapeutic point of view are the modifications which have been produced in the laboratory. It is possible to prepare from œstrone by vigorous hydrogenation

[1] Butenandt, A.: Wien. Klin. Woch., July 20th and 27th, 1934, pp. 897 and 901; cf. Forschungen u. Fortschritte, 1934, x., 266, 276.

[2] Dodds, E. C.: THE LANCET, 1934, i., 931, 987, 1048.

a substance with male hormone activity; on the other hand, reduction of the ketonic group of both œstrone and androsterone yields substances in which the original sexually specific activity is greatly enhanced. To the œstrone group may now be added the corpus luteum hormone, responsible for the progestational secretory phase of the uterus; for Prof. BUTENANDT announces that, in collaboration with Prof. W. SCHOELLER and others, he has achieved the isolation of a crystalline active substance of the formula $C_{21}H_{30}O_2$ or $C_{20}H_{28}O_2$, which is a diketone evidently belonging to the same chemical series. Almost simultaneously two other groups of workers [3] have announced the isolation of active substances. There is some inconsistency in these reports, but it cannot be long before another sexual hormone of definite properties is available in a state of purity.

Concurrently with these chemical advances, the physiological-chemical picture of the female sexual cycle is becoming clearer. It is now possible to visualise a mechanism in which the anterior hypophysis stimulates the ovary, which in turn stimulates mamma, vagina, and uterus, whilst, probably by a nervous path involving a sexual centre in the mid-brain, the gonads react on the hypophysis and inhibit its activity in the final phase of the cycle.

ON DEBT COLLECTING

ONE of the points in favour of contract practice is that there are no book debts, no accounts to send out, and little variability in income. Yet most insurance practitioners are also engaged in private practice; although they do exist, there are few doctors who refuse to see a patient because he is not an insured person. The question of sending out accounts and the getting in of book debts does therefore come into the purview of most practitioners whether they are on the panel or not. Judging from the number of circulars they receive from debt-collecting agencies this appears to be the time when they should be getting busy about it. One circular is headed "without offence"; there seems to be some idea that a patient who owes a doctor for attendance is offended if he is asked to pay up. This may be so in a few cases, but experience shows that even when debtors have been put through the county court they are apt to come back to the same doctor. This question of offence is much overdone. In earlier times practitioners sent their accounts out once a year; the patient might then have forgotten he had ever been attended or have moved elsewhere, and book debts were heavy. Some practitioners now send out accounts half-yearly, most of them quarterly; others do so as soon as the attendance is finished or at the end of the month. Whilst it is definitely bad for any practice to have the doctor in charge of it always worrying about his bills and talking to his patients about them, yet on the other hand he will find his unremunerative work increase rapidly if he never, through fear of giving offence, puts any pressure upon a patient to pay up who can afford to do so. This will have its effect, too, on the selling value of the practice which is based upon gross receipts. If a practice is being sold, for example, at one and a half years' purchase the collection of £10 in book debts will make £15 difference to its value in that year.

It is a good plan to send out accounts at regular intervals even to substantial patients, for they then know the amount of their indebtedness; less substantial patients will often pay at once a relatively small bill of £3 or £4, whilst they will feel £7 or £8 more than they can manage—and this type of person does not like to pay in instalments. If an account is not paid when sent out once it should be sent in again as an account rendered at the next regular interval. If it still remains unpaid the question arises what next to do. It may, of course, be sent in again, perhaps with some friendly remark added to the billhead or even underlined in red ink; but if it then still remains unpaid in a busy practice further help in its collection will probably be needed. Investigation may prove that the address is wrong, that the patient has moved away and letters have not been forwarded, that financial loss has occurred making payment impossible. Before instructing a collector some practitioners send out another form, in which it is stated that the account is considerably overdue and asking the patient to suggest terms for settlement in the course of a few days, failing which it will reluctantly be placed in the hands of X.Y.Z. for collection. X.Y.Z. may be one of the usual debt-collecting agencies or a private individual who takes a commission on the amount he collects. Such collectors visit the houses and trace removals; they arrange for payments on account and, if necessary, deal with county court cases if there is no dispute as to charges. But the results of their efforts are rarely good. They are apt to blame the doctors for not handing them their accounts sooner, and it has been suggested that the practitioner should supply the collecting bureau with a duplicate copy of his day-book from which to send timely reminder. If this bureau charges 5 per cent. on all the money collected, instead of the usual 15 per cent. on those ageing debts which are placed in its hands, the scheme is not likely to be adopted in a practice where there is any secretarial efficiency, although it would save the doctor who worries about his accounts. All he would have to do would be to send off one day-book when the other comes back, informing the bureau of the receipts he had taken in the period.

A woman was once heard to boast in a chemist's shop that she had consulted eight doctors in one small town and had not paid one of them. She would deserve all she got from the firm handling of a competent collector. But just as it is unfair to A, who does his best to pay up, to let B, who does not try to pay, go scot-free, so it is bad policy to put pressure on C, who has had a long spell of illness or has suffered some unforeseen misfortune. Such persons should be transferred to the local public medical service whose rates they can afford to pay.

[3] Hartmann and Wettstein: Helv. Chim. Acta, 1934, xvii., 878; Slotta, Ruschig, and Fels: Ber. d. Deut. Chem. Gesell., 1934, lxvii., 1270.

ANNOTATIONS

REMOTE CONSEQUENCES OF GASTRO-INTESTINAL DEFECTS

THE causal relationship between abnormality of the gastric secretion and pernicious anæmia, foreseen by Samuel Fenwick, Faber, Hurst, and many others, is now firmly established by the work of W. B. Castle and his American collaborators. Tropical sprue, which is certainly a primary disease of the gastro-intestinal tract, often leads to the appearance of severe macrocytic anæmia or of tetany, whilst cœliac disease has been shown by Bennett, Hunter, and Vaughan to lead at times to several varieties of severe anæmia, to tetany, and to considerable bony softening. These examples illustrate the serious remote effects of certain gastro-intestinal disorders; consequences which may with complete accuracy be classed as deficiency diseases although they are occasioned not by defective diet but by obscure lesions of the alimentary canal, preventing the proper digestion or absorption of certain essential constituents of the normal diet. The manner in which the deranged alimentary canal can in this way create deficiency diseases is discussed in a recent article by Maurice B. Strauss.[1] After reviewing the various experiments responsible for the modern theory of the causation of pernicious anæmia, Strauss quotes the classical case of macrocytic anæmia described by Addison in a patient with ulcerative colitis, and similar cases associated with prolonged diarrhœa and chronic bacillary dysentery. Macrocytic anæmia which has been described in connexion with chronic gastric fistulæ is strictly comparable to the series which accompany strictures of the small intestine, colon, or cæcum. In his own experience he has seen such a condition arise in a child eight years of age in whom various short circuits between loops of small intestine had occurred following intestinal obstruction of inflammatory origin.

Pellagra when it occurred in endemic form is probably due to lack of vitamin B_2 (G), but cases have occurred in which all the manifestations of this disease appeared, with normal dietary, in patients with severe alcoholic gastro-enteritis. Pellagra has been reported in 15 cases of cancer of the stomach, usually associated with pyloric obstruction; it has also been encountered in cancer of the ileum and even in association with strictures of the rectum. Skin lesions identical with those of pellagra have been reported with diarrhœal diseases such as ulcerative colitis, dysentery, and various forms of rectal disease, and also in certain diseases of the small intestine and even of the œsophagus. Another effect of deficiency occasioned by gastro-intestinal disease is to be found in peripheral polyneuritis. Chronic alcoholism as a cause of neuritis has been known for upwards of 150 years, but it is only recently that Shattuck has formulated the theory that "alcoholic" neuritis is in reality a deficiency disease similar to the neuritis seen in beri-beri. This opinion is confirmed by the work of Minot, Cobb, and Strauss, who have relieved alcoholic neuritis by the oral and hypodermic administration of vitamin B whilst permitting the administration of alcohol to continue. Polyneuritis has been reported fairly frequently in cases of pyloric stenosis secondary to peptic ulcer, and it has also been seen in association with dysentery and ulcerative colitis. In fact a mass of evidence accumulates to show that a deficiency caused by defects of the alimentary canal may be responsible for this neurological picture quite frequently.

[1] Jour. Amer. Med. Assoc., 1934, ciii., 1.

BRONCHOSPIROMETRY

REFERENCE has been already made in these columns [1] to a method by which the function of the two lungs may be studied separately. One of the authors of the original paper, Dr. S. Björkman, has now produced a small monograph on the subject.[2] The procedure is to pass a "double bronchoscope," consisting of two tubes one inside the other. The inner tube communicates with one main bronchus, where an air-tight junction is maintained by the inflation of a rubber armlet, and the outer communicates with the lumen of the trachea (and thus with the other main bronchus), a second rubber armlet being inflated just below the lower end of the larynx so as to prevent air passing in any way except through the bronchoscope. By means of recording spirometers connected with the two tubes, accurate measurements of the functional activity of each lung can be obtained. A certain number of normal people have been examined and supply readings which serve as a background for the results in nearly 60 patients suffering from pulmonary disease. Björkman says that, normally, the left lung accounts for 40 to 50 per cent. and the right lung 60 to 50 per cent. of the total ventilation, but this relationship is of course much altered, where there is disease of one lung. What is surprising is to learn that often the alteration from normal as regards the distribution of total oxygen intake and total carbon dioxide output on the two sides is not uniform; so that while the respiratory quotient for the two lungs together is normal, a different quotient was obtained for each lung separately. The suggestion is made that possibly carbon-dioxide is actively excreted by the mucous membrane of the bronchi and that this process is sometimes impaired by disease. The functional activity of the lungs in different postures has been studied, and also the effects of coughing, confirmation being obtained for the view that sputum from a diseased lung may enter a sound lung during this complicated act. Björkman admits that his method is applicable only to a small group of subjects, but his observations provide the clinical physiologist with fresh objectives.

A GALLERY OF "TROPICAL DOCTORS"

Dr. Gottlier Olpp, who directs the Institute of Medical Missions at Tübingen and holds a chair in the University, has brought out a remarkable directory [3] of doctors, living and dead, whose names are associated with service in the tropics. He has spread his net very wide—to include Hippocrates, Imhotep, and Berkefeld, inventor of the filter—and has included some 300 biographies of which only quite a modest proportion, not more than one-third, are of German origin; and the collection is made more remarkable by the fact that he has collected a gallery of excellent portraits with only a few relatively unimportant omissions. Dr. Olpp went out to China as a medical missionary and began at once to collect material to perpetuate the memory of men for whom he conceived a profound admiration. For 20 years past he has gone on collecting with the help of correspondents in many countries—he acknowledges the help of Nuttall in Cambridge, Andrew Balfour and Manson-Bahr in London, Stephens in Liverpool—and accepting living experts at their own valuation

[1] THE LANCET 1933, i., 481.
[2] Acta Med. Scand., Suppl. LVI., Stockholm, 1934, Pp. 199.
[3] Hervorragende Tropenärzte in Wort und Bild. Munich: Verlag der Ärztlichen Rundschau, Otto Gmelin. Pp. 446. R.M.30

although impeded by their inherent modesty. The several biographies are interesting in themselves; they have been put together with skill and there is considerable charm in the author's extreme simplicity of style. To the inexpert, approaching the history of tropical medicine for the first time, he recommends the reading of biographies in the following order—viz., Leeuwenhoek, Jenner, Meigen, Pollender, Griesinger, Bilharz, Obermeier, Koch, Laveran, Baelz, Pasteur, Metchnikoff, Manson, Ross, Reed, Gorgas, Carroll, Ehrlich—a list which does credit as much to his sense of proportion as to his freedom from national prejudice. Having been a medical missionary himself he has allowed himself to go strong in recounting missionary endeavour, and here again the reader will be grateful for his indication of seven biographies which deserve study. Happily in this case there are some survivors. To the biography there is in many cases a bibliography attached, and the author takes credit for giving the present address of these who are still alive. The production of the book is as distinguished as its authorship. The paper cover is attractive in design, the typesetting beyond criticism, and the index a model for other effort. The book is indispensable in any medical library.

PHOTOTHERAPY OF THE EYE

A DEPARTMENT for ultra-violet treatment was established at Moorfields Hospital in 1925, under Sir Stewart Duke-Elder, who summarise his work in reports issued in 1926 and 1928. In the book before us [1] his successor, Mr. F. W. Law, considers all the cases who had a full course of such treatment, general or local, in the clinic last year, and some of those treated in the three years preceding. To help towards assessing the permanence of results a letter was sent out to the patients or their parents as to their present condition. The effect of general phototherapy must be read in the light of the fact that the patients were attending hospital three times a week for a long period, and therefore received also other treatment in an unusually thorough way. This resulted in a high standard of cleanliness, for the undressing of a child three times a week before a nurse has its educative value on the mother. With these provisos Mr. Law endorses the favourable opinions expressed by other writers of the ultra-violet treatment of blepharitis, phlyctenular disease, and conjunctivitis in children. Most forms of keratitis derive some benefit; this applies, in Mr. Law's experience, even to interstitial keratitis. Syphilitic iridocyclitis and tuberculous disease failed to react, and, on the whole, his results do not reach the high level of some other workers. General phototherapy is, in fact, no more than an adjunct in treatment. Local irradiation in its own sphere has more to offer. Mr. Law reports 51 cases, nearly all of them corneal ulcers or different forms of keratitis, treated by focusing the rays exactly on the spot. Although he has himself never seen a cataract remotely connected with ultra-violet therapy, the application calls for continual care. Preferably the pupil should be small, although this is not always feasible. The usual initial dose is one of 2 to 2½ minutes, but if the duration of the beam has to be as oblique as 45° the time of exposure may be increased by one-half; if to 60° it may be doubled. Although corneal ulcers undoubtedly heal more quickly when irradiated there is not sufficient evidence that the density of the subsequent scar is less, nor is there any effect on established nebulæ. In tuberculous iritis there is often a suggestion of improvement, but the dosage needs careful watching. Throughout the monograph Mr. Law maintains a severely critical attitude towards his own results. In using radium and X rays for eye diseases the danger of inducing cataract must, he says, always be taken into account. Infra-red rays play no part as a therapeutic agent in diseases of the eye; they are a source of possible injury to cornea, lens, and retina—e.g., eclipse blindness.

[1] Ultra-violet Therapy in Eye Disease, with a review of other forms of Radiant Energy. By Frank W. Law, M.A., M.D., B.Chir. Camb., F.R.C.S., Assistant Surgeon, Central London Ophthalmic Hospital; Pathologist and Curator, and Medical Officer in charge of the physico-therapeutic department, Royal London Ophthalmic Hospital (Moorfields). With foreword by Sir Stewart Duke-Elder, M.D., F.R.C.S. Published for the Middlesex Hospital by John Murray. 1934. Pp. 78. 5s.

THE ENGLISH TONGUE

THE history of the English language is not a matter for philologists; all persons with claims to education, in the countries where English is spoken, should have some acquaintance with the origin and development of their own tongue. In the United States of late this feeling has certainly been active, and a short article on the subject in the *Medical Record* for July 4th is worth attention. The writer says that few persons know the origin of "the King's English," evidently thinking that fuller appreciation of the lineage of language would minimise its frequent abuse. His pithy sketch of the Saxon invasion and the settlements of parts of England at different epochs gives reasons for the gradual evolution of English to its present standard. According to him it was not until 1385 that the language of the English-speaking peoples stepped out of its dialect petticoats to become an adult tongue, since when it has taken its place as the most universal means of intercommunication. On the cover page of the same issue of the *Medical Record* there is a picture of Dr. Thomas L. Stedman, for many years the editor of the journal, and this is opportune, for Stedman is a master of English, as well as a versatile linguist. Largely through this fact he has made a reputation as a lexicographer, where an accurate knowledge alike of the subject in hand and of languages is essential.

EPIDEMIC MYALGIA IN SWEDEN

IN a note presented to the permanent committee of the Office International d'Hygiêne publique, Dr. R. Huss [1] outlines the salient features of the epidemic of myalgia which, in the summer and autumn of 1931, claimed many victims in the southern coastal areas of Sweden and in Denmark.[2] Though not a single case was fatal, the manifestations of the disease, when it was of the abdominal type, led occasionally to an exploratory laparotomy which proved nothing but the mistake in making it. There was also a thoracic type with bilateral symptoms referable to the lower chest. The most common complications were orchitis (some 50 cases) and dry pleurisy (about a score). Catarrhal symptoms referable to the respiratory tract were rare. Some cases were characterised by euphoria and flushing of the face. It seems that the epidemic had had its forerunners in 1927, 1929, and 1930. The outbreak of 1931 began in the middle of June in the seaport of Marstrand, at which two Swedish warships were stationed from June 18th to 26th. The sickness-rate on these ships a few days after they had left Marstrand was such that about a third of the crews was involved. Between the ages of 14 and 17 there were 190 persons, 72 of whom fell ill. Between the ages of 20 and 30 there were only

[1] Bull. de l'Off. Internat. d'hyg. pub., June, 1934, p. 1083.
[2] See THE LANCET, 1933, i., 709.

12 patients out of a possible 44, and none of the 14 members of the crews who were over the age of 30 developed the disease. Apparently, therefore, it has a predilection for adolescents. As for the mode of propagation, Huss is inclined to defer final judgment till more tangible evidence is available. In favour of a contact infection was the behaviour of the epidemic on board the two warships; but the theory of a contact infection was not supported by the tendency of the disease to flare up in certain well-defined areas on the seaboard, and to leave whole communities here and there in the same area untouched. The occurrence of the outbreak in the hottest months of the year was suggestive of an insect-borne disease, and its explosive character on certain occasions gave support to the theory that it was conveyed by water.

EXHIBITS AT THE COLLEGE OF SURGEONS

THE Royal College of Surgeons of England has received an important addition to the historical section of its museum by a gift from Miss K. R. Image of over 300 surgical instruments belonging to her father and grandfather. The collection, which was formerly in the possession of the faculty of medicine at Cambridge, was made by William Edmund Image, an honorary fellow of the College, and his son, Francis Edward Image, M.B. They practised at Bury St. Edmunds between 1830 and 1913, and the instruments may be said to represent the complete armamentarium of a country general practitioner of the last century. They are now on view and include more than 40 varieties of scalpels, bistouries, and dressing instruments, together with knives for amputation and lithotomy. The gynæcological and obstetric instruments comprise several types of vaginal specula, from the old bladed patterns to Fergusson's silvered glass instrument, the midwifery forceps of Robertson, Waller, and Simpson, and cephalotribes and forceps in great variety. Lithotomy instruments are also well represented and include the lithotrites of Fergusson, Thompson, and Weiss, as well as stone-crushers, gorgets, and the lithotomy knives devised by Liston and Thompson. There is a comprehensive collection of ophthalmic, aural, and nasal instruments which illustrate the period of development between 1830–70, and the instruments for amputation include Liston's and Lisfranc's knives, saws, and several types of bone-forceps.

Among the earlier exhibits are a number of dry-cupping sets, scarifactors, and glasses complete with spirit lamp; cauteries, stethometers, otoscopes, and one of the earliest types of Dudgeon's sphygmograph. There is also a pair of the long clinical thermometers, introduced by Prof. William Aitken of Netley, used in hospitals in 1866. Another gift to the College, which is of special interest in this connexion, is a thermometer that originally belonged to Dr. John Aikin, of Warrington, the medical biographer, who was born in 1747 and died in 1823. It is 6¼ in. in length and is bent at a right angle of 25° at one end terminating in the mercury bulb. The index is of ivory which is clipped on to the stem and is graduated in half inches from 1 to 12, and is divided into tenths. It is marked "Cary. London," and is enclosed in a velvet-lined leather case. It was probably used before the end of the eighteenth century, and is similar to one described as having been used by Sir Astley Cooper in 1802, which also had an ivory scale. This authentic specimen is probably the earliest type of clinical thermometer known, and descended in direct line from Dr. Aikin to Mr. C. W. Brodribb, who presented it to the museum.

Instruments of more recent date now on exhibition at the College are represented by the original model of Kocher's artery forceps made for the inventor and presented by his son, Dr. Albert Kocher; also a set of four instruments devised and used by Prof. Trendelenburg for performing embolectomy,[1] which were given to and presented by Sir Charles Ballance. Objects of more general interest include a mummified hand said to have been that of Dick Turpin, the highwayman, who was hanged at York in 1739, and some relics of the Roman occupation discovered last year near the Poultry and presented by Dr. Mervyn Gordon, F.R.S. They consist of two spoon-sounds, two ear-scoops, a pair of forceps with ear scoop, and a long needle, all in an excellent state of preservation. They are believed to date from the first century.

INJECTIONS OF CARBON

SOME observations by Gaudier and Démarez[2] on the treatment of infections by means of injections of animal carbon arise out of an earlier communication to the French Academy of Medicine by Saint-Jacques, of Montreal.[3] They have given this treatment to 25 patients suffering from various infections, surgical, medical, and obstetric. Each dose consists of 2–5 c.cm. of a suspension of animal carbon in isotonic glucose serum, containing from 1 to 3 per cent. of carbon, and the injections were given every or every other day or at longer intervals, the maximum total dosage being 42 c.cm. of a 2 per cent. solution. The injections were painless even when some of the solution was deposited outside a vein, and there was no violent reaction at the time such as pallor, flushing, shivering, dyspnœa, or any change in the pulse and blood pressure. There was not even a febrile reaction, and the treatment could not, therefore, be considered as a variety of shock treatment. Gaudier and Démarez believe that as a rule the injection was followed by a fall in temperature of at least 0·5° C.—a fall which in the favourable cases was maintained and even continued in association with clinical improvement which was sometimes startling. The carbon did not seem to have a direct antipyretic action, and it was ineffective when escape was not provided for collections of pus. The best results were achieved in diffuse, inflammatory processes, when the reaction of the organism to the infection hung fire, or when it ran an acute and serious course without free suppuration. It is said that pneumonia and acute articular rheumatism also responded satisfactorily to the remedy, but its mode of action remains obscure.

CANCER OF THE LARYNX

Dr. J. H. Douglas Webster reports[4] two cases of laryngeal cancer in which the patients have been well for nearly 12 months after treatment with X rays, according to the protracted fractional method described by Dr. Coutard, of Paris, in our issue of July 7th. Dr. Webster's previous study of 42 cases of cancer of the larynx shows clearly that the disease can rarely be controlled by the methods of X radiation which have been successful in other situations. All methods he has employed have ultimately led to failure, except occasionally in post-operative "prophylactic" cases, in which it is not known whether any malignant cells have been left in the tissues. Exact clinical details of the two cases now reported are not given, but it is stated that the first had a

[1] See THE LANCET, 1912, i., 139.
[2] Bull. de l'Acad. de Méd., 1934, cxii., 45.
[3] See THE LANCET, 1934, i., 418.
[4] Jour. Laryng. and Otol., July, 1934.

large fixed mass over the right side of the larynx and œdematous swelling of the right arytenoid and false cord; a specimen removed from the larynx was only œdematous tissue, but one from the external tumour showed an undifferentiated squamous-celled cancer with much fibrous reaction. The second patient had undergone a partial laryngectomy, with removal of the left cord and all visible growth, after he had refused total excision of the larynx; the tumour was of Grade 3 in Broders's classification. In neither case is there any sign of recurrence almost a year later, and Dr. Webster believes that the method gives great promise for the future usefulness of X ray therapy in squamous-celled carcinoma of the larynx, pharynx, and tonsil. The technique unfortunately is very laborious, so that each patient requires an expenditure of time and energy which would suffice for about 20 treated by ordinary "short-time" radiation. The essentials of Coutard's plan is that each dose is *protracted*, or of low intensity, 3 to 4 r per minute instead of 30 or 40 r as often given, and that the doses are highly *fractionated* compared with other fractional methods; the entire dosage is divided up over 2–4 or more weeks, and the patient should not be treated for more than three or four hours a day if undesirable reactions are to be avoided. As the result of these low-intensity treatments, spread over a long period, an extraordinarily high total dosage can be applied with safety, and the success obtained seems to depend on this fact.

SCHOOL-CHILDREN IN CENTRAL EUROPE

A GENERAL idea of the conditions of childhood in a central European city is given by Dr. E. Neuber's survey [1] of school-children from 6 to 8 years old in the elementary schools of Debrecen in Hungary. Neuber himself is actively concerned with the campaign against venereal disease, and among the 1612 children studied he found 36 who were definitely syphilitic, while a further 43 were probably infected. A gynæcological investigation carried out in nearly 70 per cent. of the girls showed, among other things, the presence of a vaginal discharge in 68 out of 538, and 3 of these proved to have gonorrhœa. It is thought that more elaborate examination would have raised this figure to a much higher level. A tuberculin reaction was positive in 30 per cent. of the children, and radiography of the lungs, carried out for 1583, revealed definite changes in 648 (that is, over 40 per cent.), though only about half of these were of such a nature as to suggest tuberculosis. Roughly speaking, therefore, one-fifth of the children showed changes in the chest suggesting tuberculosis, but it was thought that in only one in five of these was the disease in an active state. Intestinal parasites were found in about a quarter of the children, the commonest being *Trichocephalus dispar*; nits and pediculi capitis were present in just over 30 per cent., and the predominance of girls among them leads Neuber to plead for a compulsory Eton crop (Etonfrisur). The results of ophthalmological investigation revealed what seems, in comparison with standards in this country, very few defects, for out of the 1325 children examined 1250 were passed as completely normal. Of those with refractive errors, myopia accounted for 4, hypermetropia for 14, and astigmatism for 20. On the other hand, dental disease appears to be as common in Hungary as in this country, since nearly 70 per cent. of the children out of the total of 1612 had defects in their teeth. Their incidence was considerably less among children coming from the country than among those who were town-bred.

Neuber's survey was made in 1931–32, before the economic depression reached its greatest depth. A report by Dr. R. Paula Lopes to the International Labour Office [2] suggests that in Germany, Poland, and elsewhere there has been a serious deterioration since that time. In an inquiry into the situation of 383 unemployed families in the Silesian mining industry and the Lodz textile industry it was found that no less than 311 of the 382 children of school age could not attend school regularly, the chief reason being lack of clothing. A report of the Prussian Ministry of Social Welfare records that in all the Prussian schools there has been a striking increase since the end of 1931 in the number of cases of anæmia, scrofula, dental caries, diseases of growth, and nervous states which reveal themselves in early fatigue and inattention. "Numerous reports from clinics, health centres, and school medical officers confirm these facts; some of them also mention a notable increase in the incidence of rickets and tuberculosis." The gravity of all these facts, Lopes points out, is increased by the inability of the municipalities to devote large sums to the relief of poverty. Thus the free distribution of milk in Berlin was cut down by 50 per cent. in 1932, and in the same year an inquiry made by the Verband der Kommunal-Schulfürsorgeärzte showed that similar restrictions had been introduced in the 43 towns covered.

DISTRIBUTION OF BOVINE TUBERCULOSIS IN MAN

DURING the past two years the tuberculosis division of the State Serum Institute in Copenhagen has followed a uniform technique in the differentiation of human and bovine strains of tubercle bacilli derived, for the most part, from human sources. Some idea of the extent of these operations is given by the statement, published by Dr. K. A. Jensen,[3] that during these two years 7031 specimens have been examined, and 1772 strains of tubercle bacilli have been isolated from the same number of patients. The interest of Dr. Jensen's work does not, however, lie so much in the volume of his work as in his geographical handling of it. In the past, as he points out, most statistics have been concerned only with the relative number of human and bovine strains found in a given laboratory, and with a grouping of these strains according to the ages of the patients from which they came. By referring each strain back to the area in Denmark whence it came, Dr. Jensen has succeeded in showing how impressively unequal is the distribution of tuberculosis of the bovine type in human beings throughout the country. In some counties it is practically non-existent. In others its incidence is much in excess of that indicated by the large collective statistics of any other country. Such a geographical survey of tuberculosis in human beings infected with the bovine type should prove of great practical value where the eradication of tuberculosis in cattle is under discussion. It will be remembered that Bang's system for the eradication of tuberculosis in cattle has for many years been put into practice in Denmark with the result that it is almost completely stamped out in certain areas. No greater spur to the completion of this work could be found than Dr. Jensen's investigations, which so clearly link up tuberculosis in cattle with tuberculosis of the bovine type in human beings. If, he argues, tuber-

[1] Wien. klin. Woch., 1934, xlvii., 364 and 391.

[2] International Labour Review, June, 1934, p. 784.

[3] Nordisk Medicinsk Tidskrift, May 12th, 1934, p. 590.

culosis in cattle is not stamped out, the time may come when, with the diminution of the human type, the bovine type may take its place, increasing among human beings, even though it remained stationary among cattle. A year ago in our own columns,[4] A. S. Griffith and W. T. Munro reported a "startling" number of cases of pulmonary tubercle associated with the bovine bacillus in England and Scotland. They were very unequally distributed over the country.

STATESMAN, PRIEST, AND PHYSICIAN

THE name of Robert Laws, who died in a nursing-home in London at the age of 83 on Monday last, is probably familiar to many as a missionary and statesman, though the fact that the starting-point of his career was medical may have escaped notice. He received a full medical education, however, at the University of Aberdeen, and later studied at the Edinburgh Presbyterian Theological College. He obtained a doctorate in both faculties and was ordained a medical missionary in 1874. He continued in medical practice as a resident in the Glasgow small-pox hospital until the founding by the United Presbyterian Church of a mission in Nyasaland in memory of Livingstone. Laws formed one of the small party sent out to organise the starting of the mission, and his medical knowledge was of great value to his comrades; in the development of the work which followed it proved of the first importance. Two years later his wife joined him in Nyasaland, and for 50 years the Livingstonia Mission had Laws as its organising head. While he placed his work for the gospel in the forefront of his personal programme, his energy in the cause of education, his industry in acquiring native languages, and his organising power were the other qualities to which he owed his wide influence in the Protectorate. He translated the New Testament into Nyanja, and wrote an English-Nyanja dictionary and various school-books in Nyanja and Tonga. He was nearly 80 years of age when he left Nyasaland to pass the days of his retirement in Edinburgh.

ANOTHER KIND OF MILK

THE Milk Marketing Board are proceeding with their scheme for a register of "accredited" milk producers, and its operations are to begin next January. The new scheme establishes what is in effect yet another grade of milk. To become accredited, the producer must have his herds "clinically" examined once in six months by an approved veterinary surgeon, and must permanently remove all animals considered a danger to the milk-supply. The county agricultural organiser will certify that the methods of production and handling are satisfactory, and the county medical officer of health or county bacteriologist will examine three samples annually and declare that their bacterial count does not exceed 200,000 per c.cm., and that *Bacillus coli* is absent in 0·01 c.cm. These bacteriological standards are the same as for Grade A milk on delivery, but cows supplying Grade A must be inspected every three months. Under the new scheme the accredited producer will have an extra penny a gallon for his produce, this being raised by a small levy on all producers of milk. It is hoped that with this inducement a large proportion —even a majority—will seek to qualify and that the whole standard of milk production will thereby be raised. So far so good; and in commending the proposals the *Times* (August 6th) expresses surprise that "the authorities at the Ministry of Health have not been at all enthusiastic over the scheme, because it does not, in their opinion, go far enough." Readers of an article from a well-informed correspondent which we published on May 12th (p. 1028) will be less astonished. "Assuming efficient control," he said, "it is obvious that at the best it is Grade A milk over again but with rather relaxed standards. And Grade A milk is fairly universally accepted as failing to give a safe milk-supply. . . . Stated briefly, the scheme of the Milk Marketing Board will materially assist in the production of a clean milk-supply but will do comparatively little to give a safe milk-supply, and it is a *safe* milk-supply which is insistently demanded by the medical profession." While every step towards cleanliness is highly desirable and the Board is making a useful advance in the right direction the credentials offered by accredited milk are not sufficient to make it a suitable drink for children unless its dangers are removed by heating. A roll of accredited producers combined with pasteurisation of the milk-supply would, as our correspondent pointed out, be a very valuable combination; but where there are no adequate guarantees of safety the profession will never be able to join wholeheartedly in the cry of Drink More Milk.

[4] THE LANCET, 1933, i., 399.

STANLEY MELVILLE

A COMMUNICATION from Sir Humphry Rolleston, Lord Rutherford, and eight representative co-signatories, asks that the services rendered to radiology in all its aspects by the late Dr. Stanley Melville should be recognised by some such suitable memorial as a travelling fellowship in radiology connected with his name. The National Physical Laboratory, the Royal Society of Medicine, the Society of Radiographers, St. George's Hospital, and the Brompton Hospital—the two institutions with which Melville was connected, and the British Institute of Radiology, all endorse the appeal, as does the British X Ray and Radium Protection Committee. The connexion of this last body with the appeal is particularly significant, for Melville played a prominent part in bringing home vividly to the public and the medical world the dangers of X ray work as illustrated by the tragic deaths of so many of the pioneers. Melville was also active in establishing the Cambridge diploma in medical radiology and electrology; the incorporation of the British Institute of Radiology with the Röntgen Society was another of his successful activities, for he always displayed particular anxiety with regard to the welfare of the lay-workers. Melville was himself a long and sad sufferer from injuries incurred in his professional work; he never spared himself, and always thought of others. We commend the movement to keep alive his memory to our readers. Dr. J. Duncan White and Dr. A. E. Barclay, of the British Institute of Radiology (32, Welbeck-street, London, W.1), will receive now donations however small, and a meeting will be called later of those who subscribe to decide upon the exact form which the memorial shall take eventually.

THE medical superintendent of the new British Post-Graduate Medical School, Sir Thomas Carey Evans, has received from Mr. Arthur Evans a collection of pathological specimens illustrating diseases of the gall-bladder. The specimens are beautifully mounted, each with a clinical record of the case, and the collection will form the nucleus of the museum of the school. It is hoped that other collectors may be as generous.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XIV.—PROGNOSIS OF APPENDICITIS IN CHILDHOOD

THE prognosis of appendicitis in the case of a child is a matter of some difficulty, much more so than in that of an adult. It may be regarded as an axiom that the younger the subject the more dangerous is the outcome.

That this should be so is due to several circumstances. The appendix in a child differs from that of an adult in that the walls are relatively thin and contain relatively a larger amount of lymphoid tissue. As a consequence, should appendicitis occur the reaction is more acute, and the peritoneum is so rapidly involved by infective process s that protective adhesions between adjacent structures have had little or no time to form. The blood supply to the appendix in childhood is not so adequate as that in later life. This is another factor which accounts for the more rapid extension of inflammation in the former. The most common position of the appendix in a child is the retrocæcal. This is due to the fact that with the descent of the cæcum during development the appendix is liable to be carried behind this structure. As a rule the omentum is so poorly developed in a child that it can afford very little protective influence. As compared with an adult, the child has had but little time to acquire immunity, and consequently its intestine is much less resistant to bacterial infection. For some reason or another appendicitis tends to occur in an epidemic form in children while it does not do so in adults.

The actual prognosis of appendicitis in a child, although difficult, depends on certain factors which should be taken into consideration in every case.

Early Diagnosis.—Although this is of vital importance it is often neglected by the practitioner. It must be remembered that appendicitis is the most common and, in my opinion, the most important abdominal disease occurring in children. This is borne out by statistics from children's hospitals both at home and abroad. "Colicky" abdominal pains in children are too often, even in these enlightened days, thought to be natural phenomena both by parents and practitioners. Rupture of the appendix and peritonitis are not infrequently caused by the administration of a dose of castor oil given in order to relieve such pains. It cannot be stressed too forcibly that "colicky" abdominal pains in childhood demand most careful investigation, and the possibility of an inflammatory condition of the appendix should always be kept in mind.

The mortality varies greatly, and is dependent chiefly on the time which has elapsed between the onset of the acute attack and operative treatment. There is only one form of treatment, and that is operation, which should be carried out immediately the condition is diagnosed. If this were more widely realised by both the medical and lay public there would be far fewer tragedies in the world. In the treatment of acute appendicitis there is no reason whatsoever for delaying operative measures.

Age of the Patient.—Although uncommon in infancy appendicitis has been recorded in babies soon after birth. As a general rule the younger the infant the more serious is the prognosis. The mortality during the first three years of life is high; infants cannot tolerate septic infection. The mortality is higher among boys than girls. The younger the child the less likely is the infection to become limited, owing to the thin wall of the appendix, to its poor blood supply, and to the immature and short omentum, which does not nearly reach the right iliac fossa, and cannot exert its protective mechanism which is so often such a useful feature in adult cases. In the young child again, as has been said above, immunity has not yet been acquired against the various forms of bacteria present in the bowel.

The *position of the appendix* cannot always be ascertained prior to the operation but is of great importance in prognosis. It must be generally understood that a prognosis given before operation is subject to review thereafter. If this were done as a routine there would be fewer disappointments and a better understanding between the surgeon, the family doctor, and the parents of the patient.

The appendix may occupy various positions but some are of more moment than others. The retrocæcal appendix is very common, and as long as the infection is limited to the appendix the prognosis is good. If, however, the appendix has perforated and the cellular tissues on the posterior abdominal wall are infected the prognosis is grave. Another type of case in which the prognosis is not good is one in which the appendix is long and is actually retrocolic. Here it is difficult to prevent the absorption of septic material; moreover, the infection is very liable to spread upward towards the diaphragm. In this way pulmonary complications may be added to the list of sequelæ which in themselves are severe in an infant already toxic from absorption from the acute appendicitis. The pelvic appendix is quite common, as may be gathered from an analysis of a large series of cases of appendicitis occurring in children. The prognosis is good, even when the appendix has ruptured. The infection is limited to the pelvic cavity, and the pelvic peritoneum is better able to deal with it than the peritoneum elsewhere. These cases, however, are often diagnosed late, and the surgeon frequently has to operate when there are definite signs of peritonitis. The anterior position, or the so-called "splenic" position of the appendix, is fortunately rare, as the prognosis is anything but good. The appendix lies either in front of or behind the terminal part of the ileum, and as it is there in relation with the root of the mesentery, there is a grave possibility of acute intestinal obstruction. Furthermore, the veins in the root of the mesentery may become thrombosed and lead to gangrene of the gut, or portal pyæmia may ensue with fatal results. In cases of pain in the left iliac fossa left sided appendicitis must be considered. As a rule this form is diagnosed late, and the prognosis is therefore unfavourable. In cases of transposition of the viscera the appendix is found with the cæcum in the left iliac fossa, where it is also situated in cases where intestinal rotation has failed during development.

Type of Infection.—It is not always possible to be sure of the type of organism responsible for acute appendicitis, but quite commonly this can be ascertained. A streptococcal infection makes the prognosis unfavourable; children do not tolerate streptococcal infection at all well. In these cases postoperative abscesses are common. Streptococcal appendices may be hæmatogenous and may follow infection of the throat with the same organism,

the appendicitis frequently developing before the child acquires immunity from the primary focus. The prognosis is good when infection is limited to the appendix itself. It is at this stage that the appendix should be removed, and an excellent result should be obtained in a hundred per cent. of cases. The appendix is swollen and turgid, but no infection has spread into the peritoneal cavity, although there may be some enlargement of the lymphatic glands in the ileocæcal angle. If the infection has been more severe, or the case is seen at a later stage of the disease, the appendix may be gangrenous and perforated. The perforation may be opposite a stercolith, or may occur quite commonly in the absence of one. The most frequent site of occurrence for a perforation of the appendix is at the junction of the proximal two-thirds, with the distal third; the meso-appendix carrying the appendicular artery is mostly present only in the proximal two-thirds of the appendix, and perforation occurs at the junction of the good and poor blood-supply of the appendix. A guarded prognosis is necessary when the appendix has perforated in a child. The highest mortality-rate is found in the cases in which general peritonitis is present; children cannot withstand such a general toxæmia.

Concomitant Diseases.—When the child is already suffering from some congenital or acquired disease or abnormality, such as a cardiac lesion, nephritis, bronchitis, diabetes, cyclic vomiting, or one of the exanthemata the prognosis is gravely affected.

Post-operative Treatment.—This is an important factor in prognosis. Anxious parents may try to insist on an operation performed at home, the patient sleeping in his own cot, and with his own nurse in attendance. The psychology of the child must be taken into account, but it is essential that a trained nurse should be in charge. Nurses trained at a children's hospital are, in my experience, far more competent to look after cases of acute appendicitis in children than those trained in a general hospital. It is also better for the patient to be admitted to a special nursing home for children. A trained nurse who is kind, sympathetic, and cheerful, and understands a child, is of more value in post-operative treatment than all the drugs in the pharmacopœia. A good nurse will frequently encourage sleep in cases where drugs have continually failed.

Complications.—Fortunately, it is only following perforation that complications such as secondary abscess formation, fæcal fistulæ, and acute intestinal obstruction arise. The possibility of the supervention of any one of these must be borne in mind when a prognosis is being offered.

Chronic Appendicitis.—It is wrong to imagine that chronic appendicitis is a disease limited to adult life. Cases occur in children and often show quite typical symptoms. Here, again, the correct treatment is appendicectomy and the prognosis is good.

The prognosis of appendicitis in children is thus not easy to determine by itself. The general condition of the child, its disposition and mentality are factors to be taken into consideration in every case.

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SPECIAL ARTICLES

SCHOOL MEDICAL HISTORY OF PERSONS WHO DEVELOP PULMONARY TUBERCULOSIS IN YOUNG ADULT LIFE*

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ROUTINE medical inspection has for some time been advocated as one of the hopeful methods of advance in modern preventive medicine. It is not our present purpose to discuss the place or merits of such a practice in the field of modern hygiene, but in the following investigation we desire mainly to illustrate the need for, and one of the practical applications of careful record keeping of the findings to be derived from such periodical medical overhauls. The primary objects of regular inspection appear to be: (1) the treatment of minor ailments which otherwise would perhaps be ignored and which occasionally are the precursors of disabling or even fatal sickness; (2) the diagnosis of more serious disease in its incipiency when the exhibition of skilled treatment is most likely to be successful; and (3) the recognition and, if possible, the rectification of deviations from some, often arbitrary, "normal" standard. With regard to the expediency of (1) and (2), little need be said—their value is self-evident. It is to the third point that we desire to devote special attention in this paper. It is well known how individuals, aparently perfectly healthy, differ widely from one another in respect both of physical and physiological attributes; but we know too little about how such variations predispose to different diseases or influence the duration of life and manner of dying. What, for example, is the precise significance of discovering in early adult life deviations above or below a certain normal (usually an age-specific average) in the case of body-weight, blood pressure, exercise tolerance, vital capacity, &c.? We know as a result of certain inquiries that some of these—e.g., overweight—are of significance in predisposing to the onset, or perhaps being one of the early signs of certain diseases or in curtailing life. Similarly, too, it is suspected that such conditions as enlargement of the tonsils and focal sepsis, if untreated, predispose to or cause more serious disease later in life. In general, however, the significance of individual variations is insufficiently known to allow of accurate prognostication. It is from this standpoint of research particularly, therefore, that we would stress the present value of routine medical inspection and accurate and detailed record keeping. The correlation of variations of bodily attributes in individuals at a given period of life with subsequent life-history is, we submit, one of the principal tasks to which modern hygienists must apply themselves before the maximum return from routine examination will ever be forthcoming.

Origin and Nature of the Inquiry

A problem illustrative of the foregoing points confronted us recently with regard to pulmonary tuberculosis developing in young adults. The course of mortality from this cause at these ages (15–25 years) has, compared with that at other periods of life, become a matter of special concern; and the question arose as to whether by routine clinical

* A paper read before the Tuberculosis Society of Scotland, April 20th, 1934.

examination it would be possible to predict the type of child most likely to become tuberculous in later—i.e., in this particular case, young adult life. In other words, we are asking ourselves, can anything distinctive be discovered in the physical make-up or previous medical history of school-children who are destined to develop tuberculosis at ages 15–25 years which would suffice to indicate or even make us suspect the probable future appearance of the disease? Are they, in fact, different in any way from school-children who at the subsequent ages, 15–25 years, are, so far as is known, free from manifest disease of this kind? De novo inquiry to answer such a question would obviously involve time and money; but the idea occurred to us that material for exactly that type of experiment was already available through the official records kept regarding the state of children as found at school medical inspection. We accordingly approached the public health officials of the city of Dundee for the necessary records, and to them, Drs. W. L. Burgess, A. E. Kidd, and J. H. Hunter, we desire to record our indebtedness for the willing response to our request which has made this study possible.

The inquiry involved searching out the school medical inspection records of persons notified as having developed tuberculosis within the ages mentioned, and simultaneously a series of records for a control group, these being as far as practicable for persons of the same age and sex, from the same schools, examined by the same medical officer at the same time. (In practice, this ideal was not quite obtained, particularly with regard to the exact similarity in the dates of examination.) Comparisons of this nature eliminate to a great extent differences of social class and correlated factors between the two groups of children and, more important still, the examination by similar medical officers eliminates for all practical purposes differences of medical assessment. The latter is vital in comparisons involving the incidence-rates of such non-measurable factors as malnutrition, enlargement of the tonsils, adenoids and glands, rickets, unsatisfactory or dirty clothing—as will be fully realised by those who have attempted a study of the geographical variations of such conditions on the basis of the statistics contained in the annual reports of school medical officers throughout the country.

The Data and their Significance

In all, we have available the medical records of 97 children who were ultimately notified as tuberculous at ages 15–25 years, and a like number for persons of similar ages not known to be so suffering.

INCIDENCE OF INFECTIOUS DISEASES

In Table I. are set out the percentages of children with a previous history of the principal infectious diseases. (The standard errors of the differences in this and subsequent tables have not been tabulated, but the statistical significance of the differences is made evident in the text.)

TABLE I

Incidence of infectious diseases (per cent.)

	Control.	Ultimately tuberculous.
Measles	77·32	80·41
Scarlet fever	7·22	18·56
Diphtheria	3·09	4·12
Whooping-cough	58·76	60·82
Chicken-pox	24·74	31·96
Bronchitis and pneumonia	6·19	8·25

Apart from scarlet fever, there is no evidence of significant difference of prevalence of the specified diseases in the two groups of children. A past history of such infections, therefore, is as likely to be found among controls as among the ultimately tuberculous.

CONDITION AT EXAMINATION

With regard to the actual findings at medical inspection, for some children we have available the results of more than one routine overhaul, so that the subsequent statistics relate to the total number of examinations, *not* the total children. Actually, there were 292 inspections, of the ultimately tuberculous 151 (males 84, females 67) and of controls 141 (males 74, females 67). Although there is a slightly higher proportion of females in the control group, the subsequent figures are set out for the sexes combined because of the rather small numbers available.

(*a*) *External conditions.*—The percentage incidence-rates in each group of the conditions under this heading are shown in Table II.

TABLE II

External Conditions

	Control.	Ultimately tuberculous.
Insufficient clothing	0·71	1·99
Dirty clothing	1·42	5·30
Clean heads	82·98	73·51
Nits	12·77	21·19
Verminous heads	2·13	1·99
Clean bodies	85·11	86·75
Flea-bitten bodies	11·35	7·95
Verminous bodies	3·55	3·97

Although the scanty numerical basis precludes dogmatism, the suggestion would appear to be that dirty clothing, dirty heads, and nits are more prevalent among the ultimately tuberculous. In other features the differences found are unimportant.

(*b*) *Physical condition.*—The incidence-rates for the more important factors are collected in Table III.

TABLE III

Physical Condition

		Control.	Ultimately tuberculous.
Tonsils enlarged		26·44	18·54
Adenoids present or probably present		4·96	3·31
Enlarged submaxillary glands		21·28	17·22
Enlarged cervical glands		6·38	3·97
Teeth	Perfect	7·80	4·64
	Under 4 decayed	27·66	26·49
	4 decayed	41·84	47·68
	More than 4 decayed	22·70	21·19
Oral sepsis		4·26	3·97
Nutrition	Above average	47·52	45·70
	Average	48·23	51·65
	Below average	4·26	2·65
Anæmia		8·51	4·64
Bronchial catarrh		1·42	7·28
Rickets		0·71	2·65

It would appear from the nature of the differences and their statistical significance that, here again, no noteworthy differentiation of the two groups exists except in respect of bronchial catarrh, wherein the difference is more than twice the standard error. It is difficult, however, to assess the exact weight to be laid on this, since no indication is made as to the location or permanence of these adventitiæ and to other chest findings; but since in these 11 cases, 8 were noted at ages under 10 years, 2 at 11, and 1 at 13 years, and since none of these children was notified as tuberculous until at least the age of 15 years, it would be hazardous to attach much significance to this finding and especially unwise to regard these as examples of permanent lesions, the nature of which was missed at such an early age. In all probability

the finding may denote no more than a transient bronchial catarrh.

(c) *Body-weight.*—The average weights, heights, and ages of the children separated as to sex are shown in Table IV.

TABLE IV

Average weights (pounds), heights (inches), and ages (years)

		Weight.	Height.	Age.
Males..	Control ..	63·59 ..	51·47 ..	10·64
	Ult. tb. ..	61·42 ..	50·75 ..	10·65
Females	Control ..	60·14 ..	50·52 ..	10·35
	Ult. tb. ..	63·57 ..	51·95 ..	10·67

Ult. tb. = Ultimately tuberculous.

In males the weight of the ultimately tuberculous is lower, in females is higher than in the respective control series. It will, however, be noted that there are corresponding differences in the average heights and slight differences of average age. Since body-weight in school life is to such a large extent governed by height, obviously before accurate comparisons can be instituted, allowance for differences of height and age must be made. Since the total number of observations is small, it is impossible to attempt comparisons of body-weights for specified heights and age on the basis of the crude data. From the original observations we have derived the following regression equations relating weight to height and age :—

(1) Boys (control) .. W = 2·83H − 0·18A − 79·99
(2) ,, (T.B.) .. W = 2·66H − 0·19A − 71·51
(3) Girls (control) .. W = 2·62H − 0·08A − 71·56
(4) ,, (T.B) .. W = 2·80H − 0·53A − 76·14

W = weight ; H = height ; A = age.

From these the body-weights for certain ages and heights have been predicted for each group and are shown in Table V., wherein also the weights of the ultimately tuberculous are expressed as a percentage of the corresponding control figure.

TABLE V

Body-weights for specified age and height, with weights of ultimately tuberculous expressed as percentage of controls

Age.	Height.	Males.		Females.		T.B. per cent. of control.	
		Control.	T.B.*	Control.	T.B.	M.	F.
5 ..	40 ..	32·2 ..	33·9 ..	33·0 ..	33·1 ..	105·3 ..	100·3
7 ..	45 ..	46·0 ..	46·8 ..	45 9 ..	46·1 ..	101·7 ..	100·4
9 ..	50 ..	59·7 ..	59·7 ..	58·9 ..	59·0 ..	100·0 ..	100·2
11 ..	55 ..	73·5 ..	72·7 ..	71·8 ..	71·9 ..	98·9 ..	100·1
13 ..	60 ..	87·3 ..	85·6 ..	84·8 ..	84·9 ..	98·1 ..	100·1

M. = males ; F. = female ; * Ultimately tuberculous group.

From these figures no gross differences of body-weight would appear to exist between the two groups. The ultimately tuberculous are, while of school ages, in no way inferior in this respect to controls of equal ages and heights.

A further problem arises as to whether these two selected groups of children differ from the general school population of the area. Since it is possible for the two selected groups not to differ one from the other and yet to differ grossly from the general population, we have compared (Table VI.) the actual average body-weights and coefficients of variation with the averages and coefficients of variation in a numerically equal sample of Dundee school-children of the same ages and heights. For each child in the two groups—that is, we have determined the weight for its height and age from a table published in the Dundee school medical officer's annual report for the year ending July, 1927, and compared the derived averages and coefficients of variation (columns headed "expected" in Table VI.) with those calculated from the actual body-weights.

The actual average in each case is lower than the expected figure. While the consistence of the deficit is obvious, there are two noteworthy points in connexion therewith. In the first place, the differences are very small indeed (at the outside 2 per cent.), and statistically quite insignificant. In addition, the general figures for Dundee relate to school-children examined in 1927 and the children in the two groups under investigation attended school long before that. Improvement in the physique of school-children over recent years might account for part of the observed

TABLE VI

Comparison of actual and expected body-weights (average and coefficient of variation)

		Average.		Act. per cent. of exp.	Coefficient of variation.	
		Act.	Exp.		Act.	Exp.
M.	Control .	63·59 ..	64·56 ..	98·5 ..	27·56 ..	26·08
	T.B. ..	61·42 ..	62·94 ..	97·6 ..	26·39 ..	26·91
F.	Control .	60·14 ..	60·44 ..	99·5 ..	27·36 ..	24·54
	T.B. ..	63·57 ..	64·90 ..	97·9 ..	28·59 ..	27·43

M. = males ; F. = females ; Act. = actual ; Exp. = expected.

differences. If these two points be considered, it is clear that in this respect there is no appreciable difference between the two series and the general school population of Dundee. With regard to variability, as expressed by the coefficients of variation, while in three out of the four cases the actual exceeds the expected, in no case has the difference any statistical significance.

A more detailed study of body-weights can be obtained by comparing the weights of these two groups at specified ages and for given heights with the corresponding figures for Dundee. This has been done but, except at age 5 years, where the Dundee figures exceeds that for either group, no notable differences were found.

In a report of the proceedings for 1932–33 of the Joint Tuberculosis Council just issued, the following paragraph occurs (p. 7): "It is to be hoped that sooner or later the Council will initiate research to investigate the statement that it is not the delicate children in tuberculous households, but the more robust, who later develop tuberculosis." While the children in the group examined here do not necessarily come from tuberculous households, it is clear from the above findings that, in respect of those developing tuberculosis at young adult ages, the physique does not differ significantly from that of control or even average children of school ages. Neither under- or over-average physique would appear from our data to predispose to the onset of young adult phthisis.

Summary and Conclusions

In this investigation we have scrutinised the available school medical details regarding two sets of persons, one developing tuberculosis in young adult life, the other free from this disease at that age, the object being to elicit whether such tuberculous people show any prior stigmata by which they might be singled out for special supervision or specialist examination before the onset of manifest disease. It is obvious that if differences did emerge, it might be possible to concentrate specialist diagnostic services —e.g., radiography in this particular instance—on a much smaller number of persons and, correspondingly more economically than if such services had, in the absence of directional findings, to be applied wholesale.

In actual fact, only in two respects have significant differences been obtained. In the prior incidence of scarlet fever and in the presence of bronchial catarrh

the excess frequency among the ultimately tuberculous appears to be statistically significant. With regard to common infectious diseases other than scarlet fever, the observed differences might well have arisen by chance. In the conditions found at school examination, the more frequent occurrence among the ultimately tuberculous of dirty clothing, dirty heads, and nits (indicative to some extent of the quality of maternal care—an important factor in child life) is probably significant statistically.

The physical condition of the children in respect of other factors such as tonsils, adenoids, submaxillary and cervical glands, dental decay, nutrition, anæmia, and rickets does not differ substantially in the two groups, and the differences found, irrespective of statistical insignificance, are by no means consistently in favour of the controls. With regard to the accurately measurable factor of body-weight, our investigation shows no important difference between the controls and the ultimately tuberculous, nor between these two groups and the general school population of Dundee. We cannot, of course, be dogmatic on the basis of this limited experience, but perhaps our essentially negative findings will stimulate others to whom such records are available to try out such an inquiry on a larger scale. What should be emphasised, however, is that if, on more extensive inquiry, the differences found were only of the nature and numerical order found here (but because of the larger numerical basis were statistically significant) it is quite impossible from ordinary routine medical inspection to predict with any degree of accuracy the type of school-child likely to develop tuberculosis in young adult life. If, as is commonly believed, the infection is acquired in earlier life, it would appear from our findings that it does not reveal itself in any way detectable by ordinary clinical methods.

Finally, we would re-emphasise the fact that as this inquiry is of a kind which could be instituted in respect of other diseases if routine inspection were to be generally introduced, careful and accurate recording of medical details is an essential part of the framework of any such scheme. For instance, in an investigation of this nature, more details of physical condition—such as vital capacity readings, chest measurements, and blood-pressure readings—and some details of other features such as the results of intelligence tests and elaborate details as to intercurrent illnesses of all kinds would have added appreciably to the interest and importance of our essentially negative results.

BRITISH MEDICAL ASSOCIATION

MEETING IN BOURNEMOUTH

SECTION OF MEDICINE

IN this section, Dr. J. A. RYLE (London) being in the chair, a discussion on the ætiology and treatment of

Bacillus Coli Infections

was opened by Prof. D. M. LYON (Edinburgh). He dealt first with the natural habitat of the organism in the large bowel, especially the cæcum and ascending colon, where conditions were most favourable to its growth, and the methods by which it spread. Contrary to former belief, several workers have shown the organism to be capable of penetrating the bowel wall even when in normal condition. The bacilli, it seems, are constantly entering the blood stream from the bowel, and being there destroyed. The urinary tract was commonly infected through the blood stream; it was not however yet explained why the right kidney was more often affected than the left, nor why women are more liable to pyelitis than men. Experiment has shown that the healthy animal has an enormous resistance to the colon bacillus when introduced into the blood stream, and it is difficult to infect the urinary system in this way. Spread of infection took place from lower to upper parts of the urinary tract via lymphatics, and not by urethra nor ureter. Some authors discarded the terms pyelitis and bacilluria in the belief that in all cases there was some invasion of the kidney substance. Important in the ætiology were urinary obstruction and inflammatory lesions of the bowel and the abuse of purgatives. It had been suggested that the non-appearance of organisms in the urine after a dose of cascara might be used as a test of cure. Persistent bacilluria could result from foci of infection in the gall-bladder or appendix. The gall-bladder might be infected either by blood-vessels, lymphatics, or bile-ducts. Hurst has shown that the colon bacillus could grow in the duodenum and stomach when HCl was not secreted and when stomach movement was inhibited; these conditions favoured retrograde infection. Any abnormality which interfered with drainage from the gall-bladder and any focus of infection elsewhere—e.g., in the appendix—assisted in the production of cholecystitis. While the bacillus readily entered the blood stream, its persistence and growth there was a rare occurrence. Many alleged cases of coli septicæmia were in reality simply the overflow of bacteria from some local focus, such as the appendix or gall-bladder.

Prophylactic measures consisted in the avoidance of debilitating conditions and ensuring free drainage in the urinary and biliary tracts. Constipation should be treated, though severe purging was likely to aggravate an infection. So-called intestinal antiseptics were probably of little value; the best in this class were calomel and sulphur. Liquid paraffin and agar and high colon lavage were helpful. Protein and fat should be restricted in the diet. Prof. Lyon believed treatment with vaccines to have been disappointing, probably because a large number of different organisms were covered by the term colon bacillus. For the same reason there were difficulties in getting good results from bacteriophage or antisera. In the treatment of acute urinary infections the essentials were rest, warmth, and copious drinks; flushing of the urinary tract was held by many to be the most effective measure. Alkalis were helpful in the early stages; several hundred grains of potassium citrate and sodium bicarbonate could be given in the 24 hours. The urine should be kept alkaline throughout the day, and for several days after the temperature had come down to normal; but not long enough to cause depression. In children the urine should be kept mildly alkaline for some weeks, and in pregnancy alkalis should be given till the end of term. If alkalis fail to relieve, acid might be tried or alternate courses of each for seven to ten days. Acid sodium phosphate would usually convert alkaline urine to acid. Ammonium and calcium chlorides produced stronger acidity but were liable to cause nausea and to irritate the urinary tract. Hexamine, which acted by liberating formaldehyde in an acid urine, probably did no more than inhibit the growth of the colon bacillus. To avoid interaction before reaching the urine acid and hexamine should be given at different times; in acute infections this combination was too irritant to the urinary passages and should be avoided.

Many other antiseptics had recently been introduced —e.g., the dyes of the pyridine and the flavine series; in chronic cases a succession might be tried. For the resistant resort should be had to the ketogenic diet; it had proved successful in 50 per cent. of one series which had resisted other methods. Treatment of chronic biliary infections where surgery was not advisable lay in measures likely to increase the flow of bile, such as copious drinks, magnesium sulphate direct into the duodenum or by mouth. Its action was enhanced by a preliminary injection of pituitrin. Olive oil and sodium salicylate could be used as cholagogues. Hexamine was given, but its mode of action in an alkaline medium was difficult to explain. In coli septicæmia the urgent necessity was to search for a focus of infection.

Dr. CUTHBERT DUKES (London) discussed his observations on a large series of cases which had had extensive pelvic operations, chiefly for rectal carcinoma. Although the renal tract was normal before operation, in a large proportion it became infected afterwards by the colon bacillus. Retention of urine was the most important factor. Minor defects of function, leading to a reduction of urea clearance to 40–50 per cent. of normal, or an increase in blood-urea to 50–60 mg., did not predispose to infection. Urinary antiseptics had no effect on the course of the disease; infection occurred just as readily when they were given prophylactically. Alkalis were found to have a slightly beneficial effect.

Dr. C. M. WILSON (London) had found the ketogenic diet superior to other methods in the treatment of chronic urinary infection. Of 100 cases, 12 failed; the remaining 88 were cured, but 15 relapsed later. With such a high proportion of initial successes it was a moot point whether or not a preliminary surgical overhaul was advisable or not. For a success there were two essentials: an intense ketosis, and a reduction of the pH of the urine to about 5. He advised a diet containing 300 g. fat, 10 g. carbohydrate, and 50 oz. fluid. The patient should not be kept in bed. The diet was kept up for at least one week after the urine became sterile. If the urine failed to give a positive ferric chloride test by the fourth or fifth day of treatment success was unlikely. Tests should be made morning and evening, as ketones might be absent in the morning specimen. Relapse might occur after some months; if then a surgical lesion could be excluded the treatment should be repeated.

Dr. HINDS HOWELL (London) said that using this form of treatment he found it very difficult to devise a diet containing less than 25 g. carbohydrate; or to get a urinary ketosis giving a pH of less than 5·8 and a strongly positive ferric chloride test. Ammonium chloride up to grs. 125 daily in addition to other measures might bring the pH down to 5. Avoidance of alcohol and vigorous exercise were important in preventing relapses.

Dr. E. P. POULTON (London) said he found a more marked ketosis to occur if more protein was given in the diet. Recently he had used calcium chloride (grs. 7½ six times daily in pill form) as an alternative to dieting.

Dr. W. H. OXLEY (Poplar) said he found it difficult to get patients to keep to the diet, and asked if β-oxybutyric acid was the antibactericidal principle produced by the treatment; if so, it might be possible to get results by giving this alone.

Dr. DOROTHY HARE (London) mentioned the capillometer as a simple method of testing urinary acidity. As a preliminary to treatment she believed X ray examination of the kidney after intravenous uroselectan was advisable, but the trauma of a surgical investigation might be detrimental.

Dr. E. H. WHITE (Bournemouth) stressed the importance of large quantities of fluids by mouth in the treatment of the acute case. The free drainage of the renal tract thus produced was important in preventing acute infection from becoming chronic.

The CHAIRMAN classified cases of urinary infection into four groups: the acute case with and without obstruction, and the chronic case with and without obstruction. He believed that by thorough treatment of the acute case, without obstruction with much fluid and much alkali, there would be fewer chronic cases. More than 400 grains of alkali could be given daily, since it was extremely difficult to produce an alkalosis in a patient with coli pyelitis. It was, he said, easy to overlook an early acute pyonephrosis and the possibility should be considered where the symptoms were predominantly unilateral.

Dr. S. C. DYKE (Wolverhampton) mentioned two cases of so-called pyelitis which he had examined post mortem; in one case the kidney contained a septic infarct, in the other there were multiple cortical abscesses. He found that 50 per cent. of women over 50 had pus and colon bacilli in the urine, without symptoms. Did such people, he asked, need treatment; and need anything be done for those showing a simple bacilluria?

Dr. G. W. GOODHART (London) thought that the available methods for detecting the bacillus in the blood might be defective, and that actually a persistent slight bacteræmia might exist, due perhaps to a constant leakage of organisms from the rectum into the blood stream.

Dr. WILSON in reply said that unless the urinary pH was reduced to less than 5·8 the ketogenic treatment would be ineffective. A very low carbohydrate intake was rendered possible by giving fruit.

Prof. LYON said that good results could often be obtained by simple methods of treatment. The use of β-oxybutyric acid without carbohydrate restriction would, he thought, be of no value.

SECTION OF PATHOLOGY

AT a meeting of this section, with Prof. J. W. BIGGER (Dublin) in the chair, a discussion on

Œstrus-producing Hormones

was opened by Prof. E. C. DODDS (London). It was perhaps unfortunate, he said, that considerations of laboratory convenience had caused all the work on these hormones to be done on rats and mice, so that any discussion on them automatically called up a mental picture of small rodents. Active material had at first been prepared from ovaries by extraction with volatile solvents. Later the placenta had been found a useful source, and finally it had been discovered in the urine of pregnant women, where it was relatively uncontaminated and could be studied. The material was known to contain carbon, hydrogen, and oxygen, and at a later date was proved to belong to the sterol group possessing in common with them a partial hydrogenated phenanthrene ring system. The two most important forms of the hormone occurring in the urine are ketohydroxy-œstrin and trihydroxy-œstrin. Further interesting chemical compounds may be obtained by a process of hydrogenation of ketohydroxy-œstrin. The first of these, dihydrofolliculin, is many times more potent then the original substances. Still further hydrogenation leads to a compound resembling the male sex hormone. Other œstrus-producing substances have been found from natural sources. Plants contain a compound called tokokinin which has the same type of structure as

œstrin. It has also been found that coal and certain mineral fuel oils contain œstrus-producing substances. According to some this power is due to the tokokinin of prehistoric forests, but other explanations are possible. Whilst ketohydroxy-œstrin itself has not yet been synthesised a series of synthetic œstrus-producing agents has been manufactured in the laboratory (Cook, Dodds, Hewett, and Lawson, 1934, Proc. Roy. Soc. Sec. B., cxiv., p. 272) and these are in the main derivatives of phenanthrene and dibenzanthracene. Vitamin D in very large doses was also capable of producing œstrus. Thus the naturally occurring œstrus-producing hormones were linked on the one hand with carcinogenic substances and on the other with vitamins and plant sterols.

All female animals responded to these hormones if enough were given, the response varying directly with the body-weight. C. Kaufmann had shown that the administration of œstrin with corpus luteum hormone produced menstrual changes in the uterus even of ovariectomised women. The results of his work had made it possible to state definitely that this natural phenomenon could be produced at will in castrated women. Enormous doses were necessary in ovariectomised women, but in animals a series of regular cycles could be induced after castration and then the amount required was nothing like so great as the initial dose. Much smaller quantities were necessary if the ovaries were present, and the changes might be produced by œstrin alone. Kaufmann had also demonstrated the typical picture of cystic hyperplasia of the endometrium produced by very large doses spread over several weeks. The practical application of this work was that the menses might be produced in cases of primary and secondary amenorrhœa. Very good results from 50,000 mouse units twice weekly had been reported in menopausal cases, and chronic inflammations of the vulva associated with the menopause and senility also responded well. Corpus luteum hormone controlled certain types of menorrhagia, and patients subject to abortion had been brought to term by its aid. The biochemist and biologist had placed an entirely new set of weapons in the hands of the practitioner.

Mr. A. S. PARKES, D.Sc. (London), said that the sexual cycles of all mammals had the same essential features: a phase characterised by the growth and ovulation of the Graafian follicle, and a second phase characterised by the growth of the corpus luteum. Œstrus-producing hormones were essentially associated with the first phase, and the changes characteristic of it could be produced by the injection of the hormone into ovariectomised animals: for instance, in the baboon, the perivulval skin showed extreme swelling. Œstrus-producing hormones sensitised the uterus to the action of progestin, which could not produce its effect unless the womb had been brought into the condition of œstrus by œstrin. Ketohydroxy-œstrin was stronger, weight for weight, than the other forms, but it was very doubtful whether there was any real biological difference. It was possible to say definitely that the œstrus-producing hormones would produce in the ovariectomised or inactive animal all those changes normally associated with the growth of the follicle.

Dr. H. GARDINER-HILL (London) said he had been able to use Prof. Kaufmann's extracts clinically. Two methods had been adopted: a series had been treated exactly as Prof. Kaufmann suggested, œstrin during the first half of the cycle and luteal hormone in the second half. Another series had been treated with œstrin alone. Four cases of anorexia nervosa with amenorrhœa and six cases of amenorrhœa otherwise normal had had the full course. Only one of the normal group had failed to respond. All the cases of anorexia nervosa had menstruated after treatment. None, however, had menstruated a second time spontaneously. Of five cases treated with œstrin alone two had anorexia nervosa. Three responded but the reaction was delayed. One patient had three further spontaneous normal periods. Two patients with primary amenorrhœa, aged 19, had also been treated; one had failed to respond at first but had menstruated after the second and third courses. The other had had four courses; there had been no menstruation, but definite puberal phenomena were appearing. The extracts undoubtedly controlled climacteric symptoms. A woman of 62, treated successfully for migraine, had begun to menstruate again.

Dr. J. M. ROBSON (Edinburgh) spoke of the effects produced on the uterine muscle. There was maximum activity during menstruation. Response to oxytocin was at its highest then, and also showed a marked fall at the onset of pregnancy. In the later stages of gestation there was a gradual rise. The dose required to produce contraction was the same in the mouse, the rabbit, and the woman. The reactivity was controlled by various factors, including the luteal and œstrus hormones. Œstrin injected into the ovariectomised animal would raise reactivity to the parturition level. Similarly, a pregnant animal could be affected by œstrin. There was therefore hope that the œstrus hormone might have value in obstetrics. A fairly high concentration of œstrin must be maintained. In woman it was fairly rapidly destroyed, so that dosage must be large and given at intervals of a few hours.

Dr. P. M. BISHOP (London) described two cases treated. One woman had suffered severely from flushes after artificial menopause and had been greatly relieved by œstrin. A case of secondary amenorrhœa, lasting 18 months, had had a period ten days after the first injections and her uterus had shown typical histological changes. He described a method of diagnosis of pregnancy by extracting œstrin from the woman's urine and injecting it into an animal which had had an endometrium graft into the anterior chamber of the eye; the graft could be seen to blush under the influence of œstrin. The diagnosis could be given within three or four hours, and the test seemed worth following up.

Mr. L. C. RIVETT (London) classed primary amenorrhœa and intrinsic dysmenorrhœa together as indications of failure of development. There were two classes of intrinsic dysmenorrhœa: the first type of girl had malaise, headache, and sickness rather than much pain, from the very onset of menstruation. This must be a hormonal disturbance. The second type only began to develop severe colicky pain after three or four years of normal menstruation and might be accounted for by some developmental failure of the muscle. From the clinician's point of view the accepted idea of the time of ovulation—12–17 days after the period—did not correspond with experience. He suggested that this ovulation was the discharge of a spent ovum, and that the only ovum capable of being fertilised was one released by stimulus of intercourse, as was known to occur in the rabbit.

Dr. MARIUS TAUSK (Holland) spoke of the action of œstrin in males. It was normally produced in the testis and excreted in male urine. It acted on the smooth muscle of the male genital tract; the seminal vesicles underwent marked increase in size when castrated animals were injected with œstrin. A normal male so injected suffered retardation of development of the testis, probably via the pituitary. This result marked the effect on the secondary sexual

elements. In addition to muscular growth of the vesicles there were epithelial changes, and there might be some connexion with the prostatic enlargement of old age. The male hormone counteracted the effects. Unfortunately there was a confusion of units of measurement of these hormones. Dimenformon was about twice as strong as the international standard, but its benzoate was about the same, so that 200 units given by Prof. Kaufmann was about the same as 200 international units. Slight impurities in a hormone might materially alter the biological effects, and hence dosage by weight was still far from practicable.

Prof. D. CAMPBELL (Aberdeen) said that treatment of hormone deficiency by œstrin could only be replacement therapy, comparable with insulin or thyroxine. Real treatment might be attained by means of the gonadotropic substance produced by the anterior pituitary. He showed a series of slides illustrating this action, and suggested that it would be worth while to try the effect of small doses of anterior pituitary for therapeutic purposes.

SECTION OF PÆDIATRICS

WITH DR. HAZEL CHODAK GREGORY in the chair this section held a discussion on

Osteomyelitis

Prof. JOHN FRASER (Edinburgh) said that a statistical survey carried out by C. P. G. Wakeley in the decades 1900–1910 and 1920–1930 seemed to show that osteomyelitis was a disappearing disease. There had been, however, a curious increase in the last year, as shown by the figures of the Edinburgh Royal Infirmary, where the figures for the decade May, 1924, to May, 1934, were :—

3 .. 4 .. 2 .. 3 .. 3 .. 4 .. 5 .. 7 .. 5 .. 12 (48 cases).

This increase, he suggested tentatively, might be due to the unusually dry summer.

After emphasising the fact that osteomyelitis was only a local symptom in a general septicæmia, Prof. Fraser discussed the question why the infection should localise itself so constantly in the metaphyseal areas of long bones. This localisation had been attributed to a profuse but rather stagnant blood-supply, to the tissue activities of rapid growth, and to exposure to trauma. His own view was that an explanation lay in the large amount of reticulo-endothelial tissue present, which a growing body of evidence seemed to show was one of the most important defensive mechanisms of the body. Turning to treatment he said that he was becoming more and more conservative. The gutter operation had proved disappointing ; diaphysectomy appeared wholly wrong in principle and he preferred a modification of the Starr technique, perforating the cortex of the medulla with a series of holes one-eighth of an inch in diameter at intervals of a quarter of an inch and lightly packing with an emulsion of acriflavine 0·1 per cent. and potassium citrate 2 per cent. in liquid paraffin ; the limb then being put up in a light plaster for 14 days. General measures included immuno-transfusion, but he had not had much success with sera. His mortality in these cases had been 23·2 per cent.

Mr. H. TYRRELL-GRAY (London) said he was convinced that attention should be concentrated on the septicæmia ; he had entirely abandoned operative treatment and had only had one death in five years. He exhibited X ray photographs and charts illustrating the resolution of the bone lesions under the treatment introduced by D. N. Nabarro by means of intravenous injections of mercuric perchloride gr. 1/40-1/16 and intramuscular injections of antistreptococcal serum. Unlike Prof. Fraser he had found blood cultures positive in many cases ; he had also been struck by the fact that the secondary abscesses were always staphylococcal even when the primary lesion was streptococcal.

Mr. H. W. S. WRIGHT (London) said he believed that osteomyelitis, like rickets, could be abolished if only enough care were taken ; he drew attention to the remark made by Sir Cuthbert Wallace, when this subject was last discussed by the Association, that it was primarily a disease of dirt. Bone localisation was often a late symptom of the septicæmia ; he thought Prof. Fraser under-estimated the mechanical factor in causing this localisation ; the work of Hunter on the different blood-supply of the epiphysis and diaphysis had been completely vindicated and stagnation at the cartilage must occur. He advocated early, accurate, and limited interference by means of small drill holes with the minimum of interference with the marrow. He agreed that the gutter operation and diaphysectomy were bad, but thought that plasters were often left on too long, and preferred the Carrell-Dakin treatment in some cases.

Dr. LESLIE COLE (Cambridge), speaking as a physician, laid stress on the importance of a minute examination of the bones in cases of unexplained pyrexia and on the value of a four-hourly temperature chart, blood counts and blood culture in the differential diagnosis. He had not noticed the increase in cases mentioned by previous speakers, but there had been a similar increase in tetanus which he attributed to the dry summer. Serum had not proved of value in his cases, but a recent report from Berlin claimed that convalescent serum was of great value. He was interested in Prof. Fraser's theory about the part played by the reticulo-endothelial system, but felt that splenic complications should be more common if this were involved.

Mr. S. A. S. MALKIN (Nottingham), speaking as an orthopædic surgeon, referred especially to the importance of preserving function. Both the gutter operation and diaphysectomy were unsatisfactory in this respect. In his opinion radical sequestrectomy was not performed often enough and in ten cases where this was done long-standing sinuses had cleared up completely.

Mr. W. A. MEIN (Bournemouth) discussed the original focus of infection and said he had been much struck by the number of cases of acute infections such as appendicitis and osteomyelitis, which came on a year or two after removal of the tonsils. He advocated surgery and described the technique he employed. He believed irrigation to be of great value.

Dr. E. L. GOFFE (Kingston-on-Thames) asked for further details of Mr. Tyrrell-Gray's methods.

Mr. ROBERT KENNON (Liverpool) expressed astonishment that a treatment so contrary to surgical principles should have been effective ; surely if pus were present it was the surgeon's duty to let it out. He demonstrated where to feel for points of maximum tenderness, and said that a great danger of immobilisations in plaster was the difficulty of diagnosing secondary foci.

Dr. F. J. POYNTON (London) commented on the anxiety of most physicians to hand these cases to the surgeon, while the latter he now understood was returning them to the physician. Acute lymphatic leukæmia had, in his experience, been mistaken for osteomyelitis with disastrous results.

Mr. W. J. EASTWOOD (Liverpool) said that he was in favour of the gutter operation ; drilling had been

unsatisfactory in his cases because the involucrum round the holes made subsequent sequestrectomy harder and the number of secondary abscesses increased, while the drill holes became clogged with discharge. The gutter should not be along the whole length of bone where the periosteum was stripped up as a good deal of this was the result of œdema.

Prof. FRASER, replying, said that this discussion, like the previous one, revealed that there was still no unanimity of opinion. He stressed the sharp distinction between the streptococcal and staphylococcal infections; the former killed quickly or not at all, while the latter frequently killed after a long time. His experience with mercury had not been satisfactory and he had seen albuminuria following its use. He had never been convinced of the effect of trauma as a cause. Difficulties in diagnosis between scurvy and osteomyelitis had occurred in his experience. He had gradually become more and more conservative in his methods and felt that Mr. Tyrrell-Gray's work was on the right lines.

Mr. TYRRELL-GRAY, replying to questions, stated that the details of treatment could be found in the published work of Nabarro. In his experience the staphylococcal or streptococcal nature of the infection did not matter; in five years he had only had one death and no case of sequestrectomy. He preferred mercuric perchloride to mercurochrome and had seen no signs of poisoning except gingivitis. In some cases treatment had lasted as long as six weeks with intravenous injections given every other day; other cases required daily treatment. He was confident that the death-rate could be greatly diminished by conservatism.

SECTION OF OPHTHALMOLOGY

THE President, Mr. LESLIE PATON (London) being in the chair, Mr. A. D. GRIFFITH (London) opened a discussion on

Headaches

Speaking as an ophthalmologist, he said that 24 per cent. of his private patients came to him because of headache. The history of the headache helped him to determine whether it was of ocular origin. He first paid attention to the situation of the pain; ocular headache was generally (60 per cent.) frontal or orbital ("pain behind the eyes"), more rarely it was occipital or temporal, almost never vertical. The time of onset was also of importance. Ocular headache comes on at the end of a day's work, though it may be present as an early morning headache following the misuse of the eyes on the preceding day. The delay in the onset of headache is illustrated by the week-end headache—probably due to the fact that the patient makes every possible attempt to carry on during the week. The mechanism of headache was seen at its simplest in hypermetropia; tonic contraction of the ciliary muscle is a permanent condition in these cases and is exaggerated by close work. Muscular fatigue is thus induced. The hypermetrope with an unequal error in the two eyes has to exercise an unequal degree of accommodation. In astigmatism unequal contraction of the ciliary muscle is brought into action to neutralise the corneal astigmatism by inducing lental astigmatism in the opposite direction. This mechanism may be overdone, producing an artificial astigmatism in the contrary direction to the original error. The question of contraction of iris muscle as a cause of headache was, he thought, debatable. The earlier cinemas were more productive of headache than the modern ones. The abolition of flicker, the reduction in the size of the screen, the maintenance of a certain amount of general illumination, and the long corridors with gradually diminishing intensity of illumination, all tended to diminish excessive action of the pupil. In considering headaches due to abnormalities of the extrinsic muscles of the eye, he stressed the dangers of over-correction. Vertical imbalance is more productive of discomfort than horizontal. As a rule it was the poorer eye which tended to deviate upwards; when the two eyes were of equal refraction the hyperphoric eye was usually not the "master eye." In correcting heterophoria, he did not rely so much upon the Maddox rod as upon a simpler plan. The patient is made to gaze on a distant spot of light with a red glass before his right eye and a green before the left; if the red and green lights are mixed together his heterophoria does not need correction by prisms; if he sees the red and green separate the weakest prism which will enable him to mix them is to be taken as the maximum to be prescribed. In occipital headache the pain was referred from contraction of the frontales muscles caused by the attempt to screw up the eyes; the pull is transmitted along the epicranial fascia to the occipital muscles.

Dr. WILFRED HARRIS (London) contributed a paper on headaches in relation to ocular conditions. In the past, he said, it was usual to ascribe headaches to rise of intracranial pressure and to explain migraine as the result of influences, such as pressure acting upon the recurrent meningeal branches of the trigeminal nerve supplying the dura. Yet large areas of the dura were insensitive to surgical manipulations, whilst the sympathetic nerve supply was of doubtful significance in the conduction of pain. Clinically there was no doubt that a sudden rise of intracranial pressure does produce violent headache. This is seen in subarachnoid hæmorrhage, and in distension of the ventricles. General distension causes pressure which is transmitted through the cerebral substance, and it is an open question whether the pain thus produced is due to irritation of the meningeal nerves or of brain tissue itself, such as the thalamus. Speaking of migraine, there was, he said, little doubt that in the preliminary stage (aura) there was arterial constriction; narrowing of the central artery of the retina had been observed, followed later by throbbing and dilatation of the vessel. This fact suggested that a similar constriction of the cortical vessels, especially in the occipital region, might be concerned in the production of the hemianopia or of the scotoma scintillans, and the subsequent headache due to engorgement of the vessels and cerebral compression therefrom, the vomiting itself being suggestive of intracranial pressure. True migraine, he said, rarely had any direct connexion with ocular conditions. Migraine was a periodic headache, coming on at irregular intervals, of variable duration, generally associated with nausea and vomiting, together with sensory disturbances such as aura, scintillating scotoma, hemianopia, tingling along the lips and tongue, sometimes a temporary aphasia and weakness of an arm, rarely the leg. All these were obviously cerebral effects, totally different from the headache of refractive conditions. Often there was a family history of migraine, and other neuroses might be present in the family. Speaking of headaches of ocular origin, Dr. Harris pointed out that a difference in apparent size of the images perceived by the two eyes with a consequent difficulty in stereoscopic vision, has been recently advanced as a cause. He enumerated the conditions affecting the interior of the eye which caused pain and stressed the persistence of neuralgia in cases of herpes ophthalmicus. In

particular he drew attention to the headache of cerebral arteriosclerosis, which the ophthalmologist can recognise by the changes in the retinal vessels. Such headaches were apt to be more severe at night. One pitfall, which was apt to send the patient from one specialist to another, was the pain in the condition he had described as maxillary neurosis. This was a chronic neuralgia of the jaw. In many cases the pain had started after severe dental extraction, and being unilateral was thought to be due to some piece of decayed stump or diseased bone. There often was complaint of flushing over the cheek, and though all the teeth might be removed, the antrum washed out, turbinal bones removed and glasses prescribed, the pain continued unabated. It was not paroxysmal or tic-like in character, but more or less persistent, though varying during the day. No operative treatment was of any value, and alcohol injection should be refused.

Dr. C. WORSTER-DROUGHT (London) spoke of headaches in relation to ocular conditions from the standpoint of general medicine. Of 158 cases he had seen for persistent headache, no less than 78 were suffering from migraine, 16 had apparent cerebral arteriopathy or hyperpiesis without any evidence of nephritis, 4 had chronic nephritis. A group of 16 cases had no demonstrable organic condition, their general behaviour justifying the diagnosis of neurosis. Other groups were smaller: cerebral tumour, 8; occipito-cervical fibrositis, 6; gastrointestinal disorders, 4; effect of head injury, 4; error of refraction not adequately corrected, 3; high myopia with persistent headache in spite of constant use of glasses, 3; diabetes mellitus, 3; accessory sinus disease, 3; spontaneous subarachnoid hæmorrhage, 3; unsuspected chronic encephalitis, 2; pyorrhœa, 2; masked hyperthyroidism, gross deflection of nasal septum, and pelvic disease (tuberculous tubes found at operation), 1 each. In migraine he was satisfied that refractive errors played little or no part. Cerebral arteriopathy was apt to be overlooked, especially when the blood pressure was not unduly raised. In these cases the headache might be of an intermittent "bursting" character (a type usually associated with hyperpiesis); pain of a "numb" character might also be complained of, together with a lack of "clearness." Dizziness was a frequent symptom. A point to be stressed was the fact that the state of the palpable arteries and even the height of the blood pressure was no criterion of the condition of the arteries of the central nervous system. Hence the value of an ophthalmoscopic examination. In persistent headache associated with high myopia the provision of apparently suitable glasses generally failed to give relief; no other cause for the headache could be found and use of the eyes aggravated the pain. The headache was fronto-occipital in distribution, practically continuous, present on waking in the morning, and worse as the day advanced. Headache from accessory sinus disease, in the experience of the general physician, was not common. His cases of spontaneous subarachnoid hæmorrhage all complained of headache, usually occipital, but intense backache, pain in the neck, general pain or delirium was the predominant symptom. Apart from retinal arteriosclerosis in the elderly subjects, the most common ophthalmological finding in these cases was blurring of the margins of the discs, especially on the nasal side, and occasional small retinal hæmorrhages.

Mr. MAURICE SORSBY (London) said that to the rhinologist headaches were a case of empty barrels making the loudest sound, for it was largely the air-filled sinuses which he had to incriminate. The anatomical basis was not the emptiness of the sinuses but the fact that the sinuses, acting as pockets of the nasal cavities, increased enormously a naked surface of mucous tissue supplied with exquisitely sensitive nerve-endings. Not only were the first and second divisions of the trigeminal nerve widely distributed over the nose and sinuses, but the spheno-palatine ganglion was situated in a vulnerable position, just underneath the nasal mucosa. The nose was in fact a bundle of nerves. Considering the pathological basis of the pain, there were, he said, three factors: (*a*) pressure, (*b*) vacuum, (*c*) chronic irritation. Pressure headache was seen in acute and in chronic affections of the sinuses. To the pain caused by inflammation there was added the factor of tension, for the inflammatory products do not find a ready escape from the sinuses, especially if the ostium of the affected sinus gets narrowed or blocked. In acute sinusitis local tenderness helped the diagnosis; chronic sinusitis was more apt to be overlooked. A toxic factor in the production of this type of headache could not be ignored. He deprecated the finding of a cause of headache in every abnormality of the nose; yet the fact remained that operation on that extremely common defect, deflected septum, did occasionally relieve a headache unaffected by other methods of treatment. Operation helped by restoring proper drainage in the affected sinuses and thus indirectly relieving rhinological headaches of toxic origin. He was sceptical as to the existence of vacuum headache from absorption of air in the frontal sinus after blocking of the fronto-nasal duct. Chronic irritation was a much more fruitful source of headache. These were the cases in which headaches developed after an acute sinus had settled down; radiography after lipiodol injection revealed a thickened mucosa, headache presumably being due to irritation of nerve-endings. It was difficult to decide whether to try to restore better ventilation in the sinus by operation or to adopt more palliative measures. The one type of rhinological headache which had pathognomonic features was the acute and subacute frontal sinusitis. Pain was severe, with localised tenderness below the upper and inner angle of the orbit on the side affected (Ewing's sign). Most cases lasted five to ten days, the pain coming on soon after rising and wearing off towards the middle of the day. Generally rhinological headache, in contrast to ocular headache, tended to be present on waking in the morning. The cases which the rhinologist was called upon to treat might vary from mere thickening of the mucosa to the whole range of inflammatory changes ending in empyema of the sinus. The dictum "once a sinus always a sinus" illustrated the difficulties. It was not always necessary to undertake radical operation; there was scope for minor methods, such as anæsthetising the sphenopalatine ganglion, by cocaine or alcohol, in order to cut out a centre of irritating impulses. He concluded by discussing headaches of otological origin; in the chronic ear these were not symptoms, but danger signs of intracranial complications.

The PRESIDENT drew attention to the diagnostic value of cocaine spray of the nose in cases of suspected vacuum headache. He thought that the reason why patients complained of aggravation of the headache on close work was probably due to the fact that the downward position of the eyes assumed for near work caused a pull on the trochlea and thus on the floor of the frontal sinus. An experimental analogy to the clinical type of headache due to auto-intoxication was seen in Eck's fistula with its toxæmia. He had shown that the occipital position of pain in some

forms of headaches was to be explained on the nuclear distribution of the Vth nerve. One form of headache which was puzzling to him was that seen after lumbar puncture. A grave form was that seen in patients under 40 suffering from hyperpiesis and showing soft retinal exudates. He agreed with Dr. Harris that there was no true migraine except with prodromal symptoms; migraine with vomiting seemed to constitute a distinct entity.

Mr. STENHOUSE STEWART (Hull) stressed the significance of muscle imbalance in headaches and discussed the methods to be employed in the prescribing of prisms.

Mr. A. J. BALLANTYNE (Glasgow) attached importance to imbalance, but pointed out that the nature of the patient's work was a deciding factor in precipitating the headache. He drew attention to the development of astigmatism against the rule with advancing years.

IRELAND

(FROM OUR OWN CORRESPONDENT)

CRIMINAL LAW AMENDMENT BILL

A FEW years ago the late Government of the Irish Free State appointed a small committee, containing representatives of the professions of the church, law, and medicine, and some social workers, to consider the existing laws governing the relations of the sexes, and make, if thought fit, recommendations for amendment. A report was submitted by the committee, but, for some reason which has never been stated, it has not been published. The Criminal Law Amendment Bill, which passed its third reading in the Dáil last week, is said to be based on this report, although in many points it is believed not to be as far-reaching as the committee desired. The most important changes proposed in the Bill concern the "age of consent," the suppression of prostitution, and the sale or importation of contraceptives.

By previous Acts it was a felony to have unlawful sexual knowledge of a girl under 13 years, and a misdemeanour to attempt to have such knowledge. In the present Bill it is proposed to make the age in each case 15 instead of 13. By previous Acts it was a misdemeanour to have or attempt to have unlawful sexual knowledge of a girl above the age of 13 years and under the age of 16 years. It is now proposed to make the ages 15 and 17. The "age of consent" will, therefore, be 17 if the Bill should become law. The period during which a prosecution for this offence may be commenced is to be prolonged from 3 months to 12 months. Section 16 of the Bill deals with solicitation, and Subsection 4 runs as follows:—

"Every common prostitute who is found loitering in any street, thoroughfare, or other place and importuning or soliciting passers-by for purposes of prostitution or being otherwise offensive to passers-by shall be guilty of an offence under this section and shall on summary conviction thereof be liable, in the case of a first such offence, to a fine not exceeding £2, or, in the case of a second or any subsequent such offence, to imprisonment for any term not exceeding six months."

This clause is modelled on a local Dublin police law. An amendment to substitute "person" for "common prostitute" was rejected.

The section of the Bill which has given rise to most interest, and has indeed most importance to the ordinary citizen, is Section 17, which provides for the prohibition of the sale and importation of contraceptives. It declares that "it shall not be lawful for any person to sell, or expose, offer, advertise, or keep for sale or to import or attempt to import into Saorstát Eireann for sale, any contraceptive." An offence under this subsection will be punishable by a fine not exceeding £50 or to imprisonment for not more than six months or to both such fine and such imprisonment. Moreover, contraceptives are to be deemed to be included among the goods included in the Table of Prohibitions and Restrictions Inwards in Section 42 of the Customs Consolidation Act, 1876, and the provisions of that Act (as amended or extended by subsequent Acts) shall apply accordingly. The word "contraceptive" is defined as meaning "any appliance, instrument, drug, preparation or thing, designed, purposed, or intended to prevent pregnancy resulting from sexual intercourse between human beings."

These provisions of the Bill gave rise to some criticism in the correspondence columns of the daily press, but were criticised in the Dáil by only one member, a medical deputy. He pointed out that, rigorous as the section appeared to be, it was unlikely to stop the traffic in or use of contraceptives but might readily drive the trade underground. In so far as the provisions might be effective they would probably lead to an increase of such crimes as criminal abortion and infanticide. It was recognised that the moral judgment of the majority of the people of Ireland condemned as immoral the use of contraceptives as a measure of birth control, but there were many people who did not share that view. It was neither practicable nor just to impose the moral views of part of the population by statute on a minority In certain cases, by no means rare, a virtuous married woman was faced with the advice that a pregnancy might endanger her life or gravely prejudice her health. She had at present the alternatives of abstention from marital intercourse and of contraceptive precautions. Abstention might be almost impossible in some cases, and if it were attained might lead to grave nervous disturbances and unhappiness to both wife and husband. To deny the other alternative was unjust to those whose consciences allowed them to adopt it. Notwithstanding this protest the section was carried and remains part of the Bill.

It is not clear that the Bill makes any real advance in the protection of young girls, while, on the other hand, it appears to open a wider door to the practice of blackmailing. Indeed, the notion underlying the Bill seems to be that the male is always the aggressor. Many girls of 16 to 17 are, however, precocious, and it is probable that in most cases of licentious conduct between boys and girls of the same age it is the female who seduces the male. A young lad of 16 found guilty of carnal knowledge of a girl of the same age will be liable to a sentence of penal servitude, while the girl who may have been the tempter has committed no offence known to the law.

VIENNA

(FROM OUR OWN CORRESPONDENT)

IRRADIATION IN UTERINE CANCER

Dr. Simon, reporting from the first gynæcological clinic of Vienna University, at a recent meeting of the Gesellschaft der Aerzte, reviewed the results of cases treated by irradiation at that clinic in the years 1926–28. Of 10 patients with cancer of the cervix, belonging to the group I. or II. of the

usual classification, 4 are still alive and without symptoms, having had only primary irradiation. Of the inoperable cases (group III. or IV.) there were 110 under treatment, and only 14 of these are alive and without symptoms. Operations followed by irradiations were done in 115 cases, of which 49 per cent. can be deemed cured. The frequency of recurrences in irradiated cases is 12 per cent. in the second year of observation and 9 per cent. for the third year, whilst it is 6 per cent. in cases with post-operative irradiation. It is not feasible, however, to compare these two groups of patients, for they were chosen from different standpoints. Of 5 cases of cancer of the vulva treated by irradiation 1 only was cured; of 11 of cancer of the vagina 2 were cured; of 11 of cancer of the corpus uteri 3 were cured; of 23 cases irradiated after operation 19 were cured; and of 14 cases (not operated on) with cancer of the ovary 1 only was cured, 2 being improved. It appears that the second and third years show the highest figures of recurrence.

In a report from the radiotherapeutic institute of the city of Vienna, presented at the same time, Dr. Schloss gave the results of observations based on a two-year term; they had 96 women with malignant disease of the sexual organs, verified histologically. Primary irradiation resulted in 68 being alive after two years; only 46 are without symptoms, 6 are doubtful. At this institute also, groups I. and II. gave good results, group III. gave about 35 per cent. cures, and group IV. no cure at all (cancer of the cervix). With cancer of the corpus, the vagina, or the vulva the results were very much like those of Dr. Simon. Prof. Adler emphasised the excellent effects obtained by the combined method of operation followed at once (on the operating table) by X ray or radium therapy. Up to 36 per cent. five-year cures have thus been obtained, whilst operative mortality of the "extended vaginal radical operation" of Wertheim-Schanta is only 3 per cent.

A VENERABLE HOSPITAL

In August the well-known Allgemeines Krankenhaus, or general hospital, of Vienna, which for so many years—indeed, generations—was the Mecca of students of medicine from all parts of the world, will celebrate the 150th year of its existence. It was founded by the Emperor Joseph II., who was at that time (1784) considered the most advanced and liberal ruler, and was almost the originator of democratic ideas in Central Europe. The jubilee festivities, however, will not be held this year; on account of the difficulties now prevailing in Central Europe—of all sorts and kinds—it is intended that the August celebrations shall be purely domestic, and that the proposed meeting of former pupils of the hospital shall be postponed until next spring. Invitations for this meeting will be sent out to all the professors and students whose names are known, and the Government, as well as the medical faculty of Vienna, will do their best to make the affair a real success from every point of view. It is interesting to note that the building practically reached its present size 150 years ago, when it was first erected. Only a few additional extensions have been made in later years within its spacious *Hof* (garden-grounds), among them the famous tower-like building for the care and cure of the mentally afflicted, called *Narrenthurm* (fool's tower), an outstanding feature of the hospital. The old general hospital, with its 1800 ordinary beds and 600 reserve beds, is now in close connexion with the "new" hospital, where the splendid clinics for materia medica, rhino-laryngology, children's diseases, surgery and obstetrics, and neurology are located. Gradually the old hospital, which outwardly retains its antique appearance, has been inwardly transformed into a modern fully equipped institution.

POLAND

(FROM OUR OWN CORRESPONDENT)

THE FLOODS

THE recent floods have been worse than any for over a century. Whole villages have been destroyed, fields are lying covered with ruined crops, and there are people who have lost everything they possess. Financial assistance is being organised, but there is still another misfortune which threatens these unfortunate people—the outbreak of an epidemic. With this in view preventive measures have been carried out since the beginning of the floods by the department of health of the Ministry of Social Service.

The Minister and the head of the department of health paid personal visits to the flooded provinces in the early days of the disaster so that they might the better judge of the situation and decide on the steps to be taken. The department is in touch with the flooded areas by telephone and wireless, and has been able immediately to take steps to cope with new developments. All the chief officials of the department and their sanitary inspectors were sent to help in the work of rescue, and leave was cancelled for all members of the administration of the sanitary service who might help on the local rescue committees. Even the general practitioners of the districts were mobilised and sent to the flooded regions. The population were forbidden to drink water from rivers or wells which had been muddied or contaminated, and warnings were issued against drinking water or milk which had not been boiled. Good drinking water, which often had to be brought from a distance, was distributed among the people.

When the floods had subsided the purification and disinfection of the wells with chlorine or with lime was ordered. Houses which had been covered by the water were dried and whitewashed, and the carcasses of domestic animals were buried to prevent the people from eating the contaminated flesh. Propaganda for personal hygiene was carried on by medical hygienists, and parties armed with suitable apparatus were sent round to disinfect salvaged goods and chattels.

Inoculation against typhoid and dysentery was made compulsory and administered without fee, and in one week 8500 people were vaccinated for typhoid and 45,000 for dysentery. The State Institute of Hygiene had considerably to increase its output of vaccine. A service of ambulances which patrolled the districts was organised; the number of beds in the existing hospitals was increased, and new ones were improvised to accommodate all the sick. During the last few days a mild epidemic of common gastro-enteritis of short duration has been reported, principally among children, but so far there has not been a single case of dysentery or typhoid. It seems that the battle against epidemic diseases has been won.

ROYAL EAST SUSSEX HOSPITAL.—On July 14th Lady Willingdon opened a new nurses' home at this hospital. It was originally proposed to build a home near the hospital, but the large premises and grounds of a school nearby became vacant and the premises were acquired, reconditioned, and adapted at a cost of £25,000.

CORRESPONDENCE

CORONARY THROMBOSIS AND AFTER:

A PERSONAL STORY

To the Editor of THE LANCET

SIR,—This is not a scientific communication. Perhaps for this reason an apology may be considered necessary but much more must the writer ask pardon as it is an account of a personal experience in the first person singular.

Five years ago at the age of 54 I was engaged in busy consulting practice. My work was exacting and irregular. Long distances had to be covered by car and I mostly drove myself and I was overweight and was putting on weight. I was smoking heavily—cigarettes, pipes, and cigars. At the week-ends I used to take violent exercise with the idea of keeping fit. One Sunday morning in June I turned a back somersault on the lawn. The best description of what happened afterwards is that I felt "queer" and I felt it necessary to lie still for some minutes. The same afternoon I played tennis and was conscious of an occasional tightness in the chest. The same night about 1 A.M. I was awakened by a severe pain across the lower ribs and epigastrium. As I gradually became more awake I thought I was starting an attack of gall-stone colic or pancreatitis, but in a short time the pain became more localised and was substernal about the level of the third and fourth interspace. It crossed my mind that the pain was cardiac, and I diagnosed a coronary thrombosis and waited for the next thing to happen. It is difficult to describe the pain as my sensibility was numbed after a time. But it was a gradually increasing pain, and I said to myself, "This can't go on much longer." All the time it was strictly localised. My mental attitude was strange. It seemed that it was happening to someone else. After a time I became restless and got out of bed. I was filled with curiosity and went to my dressing room and looked at myself in the glass. My face and brow were covered with sweat, the general colour was grey, and my lips blue. I said to myself: "This is shock, I need morphia." But as I had none I poured out some chlorodyne. I then thought that my last patient with this condition had been sick and I prepared myself to vomit but nothing happened. I then took the chlorodyne and went back to bed. For the first time I felt my pulse and it was very slow, but increased in rate as I became warmer.

Next morning I had almost forgotten about the attack and thought it was indigestion, but a return of the pain on attempting to do my exercises, and even with the effort of dressing, made me think differently. I then started the day's work and, as far as I can trace my actions, did it in much my usual way. I had a long country journey to a consultation, and I allowed my chauffeur to drive—which was unusual. The next few days passed in the same way, though two events are to be noted. I had been intending to have a doubtful molar out, and the extraction under local anæsthesia took 45 minutes' hard work; there was an abscess around two of the apices. I was none the worse for it—in fact, I felt better soon afterwards. The other event was an unpleasant committee meeting at the hospital. I had to speak, and said what I wished, but I brought my remarks to an early finish as I had pain. On sitting down my pulse was 140.

I asked a colleague about this time to take my blood pressure, and he found the systolic pressure was 96, the normal figure being 150 or more. At times I felt certain that the condition was cardiac but I would attempt to persuade myself that it was not so. I wrote to a friend who is a cardiologist and described to him as light-heartedly as I could what had happened. He wired "Go to bed." I compromised and gave up work and lay in a long chair in the garden. It was the time of Wimbledon, and I listened to the running description of the matches, but I found that the excitement brought on pain. I therefore collected a lot of books that I wished to read, but I hardly read a page as I promptly went to sleep. After ten days I was taken by road to see a cardiologist and an electrocardiogram was taken. I examined it and saw that the T wave was inverted in Leads II and III. I then consented to go to bed and stayed there a month. The time passed very pleasantly, as the weather was beautiful and from my bedroom I could see for many miles. With field glasses I could keep myself entertained, but reading was only possible for short periods. There was only one unpleasantness during my stay in bed. I was much bothered by premature beats and irregularities. I tried to repeat my own teaching about them. "They are of no importance except in so far as they are accompaniments of definite serious disease, they call attention to themselves and are fussy." But it did not work as it should. Another tiresome irregularity was a waning of the pulse. A wave of gradually lessening pulsation would set in and go on until the pulse was imperceptible. I was conscious of it without feeling my pulse. The sense of emptiness and of being nothing at all is indescribable. I used to wave my arms about to bring back the circulation. Finally I argued that I was too sensitive to my peculiarities, and in this I was right, for a mixture of chloral and bromide improved matters. The irregularities probably occurred but were not noticed.

The next event was the removal of the family to the seaside in August. I cannot say that I enjoyed it at first, chiefly because I missed my home comforts. But one afternoon I was alone on the beach with my younger child and she said, being in her bathing dress, "Daddy, do bathe, and then I can." The sea was inviting and the day warm, and the surf looked exhilarating. I went in under a breaker wondering what would come up. The change was miraculous. I came out feeling fit and strong and ready to run up the beach. After that a daily bathe improved my general and cardiac condition enormously. In September a second electrocardiogram was done, and the T wave in Lead II was the right way up. In Lead III it was inverted but I did not mind that.

After that I went back to work, cutting it down as much as possible. But it is only possible for a doctor to give up hospital work or similar work. If one refuses private work there is shortly none to refuse. For a year there was a constant endeavour to do as little as possible, but as private work went on increasing the only ways out of the difficulty were either to retire or start afresh elsewhere. The former meant being a bored invalid on a reduced income and therefore was not seriously considered, so 18 months after my cardiac accident I migrated. In my new surroundings I did nothing for three months, and enjoyed myself in simple pleasures such as sight-seeing and in doing things that are impossible in a busy professional life. Then becoming restive I took a consulting room and gradually collected practice once more. I now do all the work that comes my way, and I live an ordinary life, being now in my

sixtieth year. I play a little tennis of the family kind, I punt at my own pace, I swim, occasionally I dance. Each winter I go to the Alps for winter sports, and can climb on skis as well as run down, though I must confess that each winter finds me more of a rabbit.

Of course, I have cardiac sternal pain on occasions, but I have learnt to avoid it to a great extent. It is not so much the product of effort as of mental disturbance and/or a full stomach. The conditions in which the sternal pain is likely to come on become recognised and thereby avoided. An ordinary breakfast for me is a mistake if I have to work soon afterwards. Fruit, toast, and marmalade are almost a guarantee of a comfortable morning. About 11 o'clock I can do anything. I can walk quickly and in comfort, and I can tackle anybody about anything. Lunch is a light one, and is not upsetting. Tea is given a miss and dinner is variable. At home I have a short and almost teetotal meal, but I have no fads if I am dining out or have friends to dinner.

Tablets of nitroglycerin, gr. 1/100, are a great help. If taken before exercise pain does not come on or is lessened. If the pain is on, a tablet slowly sucked will drive it away. Further the knowledge that there is a supply in my pocket helps to keep pain at a distance. How nitroglycerin acts may be known to pharmacologists. In my case the first event is a good belch, followed by relief of some of the pain, possibly attributable to relaxation of spasm of the cardiac sphincter. It is curious that I have a great desire to suck lozenges. Anything will do, but I prefer a mild eucalyptus lozenge of a popular make. It is certain that with me one attack of pain in the early part of the day makes it easier for other attacks to follow. Nitroglycerin is invaluable in preventing these unpleasant happenings. Also bromides are useful, especially when some tantalising exhausting patient or telephone operator has been a nuisance. After an attack of pain ten minutes sleep in a chair is the best preventive of another.

Effort by itself can bring on pain and it is very selective. For example, digging is easier than shovelling. Walking with someone whom I do not know well, and to whom I do not wish to explain my peculiarities, is more trying than walking alone. The fear of pain coming on is likely to bring it on. Struggling to my seat when late for a theatre is sure to bring it on. I have learnt to miss trains without trying to catch them. I only board stationary buses, and I take a taxi and do not walk anywhere if I am late. Being fussed is a more potent cause of pain than effort, and when fussed effort is impossible. The following incident is a good illustration. Being a casual backer of horses, one day I backed two by telephone and doubled them. At my club, to my surprise, I found that both had won and at long odds. I suddenly wondered if the telephone message had been correctly received, and started to walk the half mile, some of it uphill, to the bookmaker's office. I had to stop four times on the way and on arrival could not manage the stairs to the first floor office. However, when I opened his door his first words were: "Well, doctor, that was a very pretty double you had to-day." I walked home at four miles an hour and without pain. This trivial incident shows very conclusively how much bunkum there can be in effort pain—at any rate in my case. But bunkum or not, the pain is real and insists on being respected. The lesson to be learned is the importance of a calm and tranquil attitude of mind, which is of even greater importance than a comfortable stomach.

Sunshine and all that it brings make pain disappear. In Switzerland for winter sports I can ski and skate quite comfortably. My performances are not what they were but I do not need to avoid expeditions on account of my condition. The only time when I had a tiresome pain was when a party of us were doing an expedition on a dull day and had to be at a certain point at a certain time in order to get a lift back. This entailed going against the clock and I had to stop. I have not done any shooting in the last few years as keeping line and being at a particular stand at the right time might be awkward. But I have waded in a salmon river and used a 16-foot rod. Driving a car is easy, but when tucked away deep in a car park the heavy work of turning the wheel to and fro is likely to bring on pain. When pain brings me to a standstill it goes on and becomes more severe for 10 or 15 seconds and then gradually goes off. It would seem that slowing of the heart at first increases the pain. With nitroglycerin, however, this symptom is not noticeable.

If there is any value to any sufferers from minor degrees of cardiac pain in what I have written it will be very gratifying to me. My advice to any who have similar symptoms is as follows: do not be upset by it; do not test yourself to see what you can do; take everything calmly and in your stride and if the pain catches you rest and suck a nitroglycerin. Regulate your life as regards meals and movements after meals. Do not be strict about diet but be sensible; do not become a valetudinarian; keep your weight down and do not smoke much—better do not smoke at all. Follow your inclinations and you will learn how much is easy for you; adopt the philosophy of the "lower level of activity" and you will find with surprise how little there is that you cannot do; remember the three things to consider in the order of importance are mind, stomach, heart.

Lastly, it is of interest that the managing director of a well-known insurance company said to me recently: "We find we can safely take the load of such heart cases as yours, as their lives are as long or longer than those of so-called normal individuals, because these heart patients have learnt to regulate their lives."—I am, Sir, yours faithfully,

July 30th. LEARN AND LIVE.

GOLD SALTS IN ASTHMA

To the Editor of THE LANCET

SIR,—Some time ago, without knowledge of any previous attempts of the same kind, we started treating cases of bronchial asthma with Sanocrysin in small doses. We were surprised to find that in every case the asthmatic attacks ceased after the first, and sometimes after the second, injection. The bronchitis also improved; so much so, that all adventitious sounds disappeared and wheezing and tightness of the chest between the attacks were banished.

Our cases may be divided into two categories, according to whether they were treated in my section at Kasr-El-Ainy Hospital or in my private practice. During the last ten months I have treated in my private clinic 55 cases of asthma, of duration varying from a few months to 14 years. All but three of these cases ceased suffering, and even these showed slight improvement. Five of the cases were purely allergic and showed no chest signs between the attacks. The rest were all bronchial. About 20 were of the seasonal type, which made me choose to treat them during the period of illness; the rest had attacks all the year round.

At the hospital there have been 46 cases in all,

3 of which did not come back after the first injection and could not be traced. A first series of 18 cases (11 of them continuous, 4 seasonal) were treated as in-patients, with the result that 15 were cured and the other 3 improved. The second series of 28 cases were treated as out-patients. Three of these, as already stated, did not come back after the first injection; 10 cases of seasonal asthma were all cured; 15 cases of continuous asthma showed 3 failures and 12 cures. In all the above cases tuberculosis was excluded by radiography of the lungs and repeated sputum examinations.

The sanocrysin is given by intravenous injection once a week, beginning with a small dose of 0·05 g. and gradually increasing it by 0·05 g. each time. Usually not more than five injections are given. Improvement appears after the second injection; the bronchitis disappears at the end in most of the cases.

Certain precautions, however, should be taken in adopting this method of treatment. First, the kidneys and liver must be sound. Examination of urine before every injection is imperative, for even if the kidneys are healthy at the beginning the gold compound is capable of producing acute nephritis; though, happily, with the small doses we have used we have had no cases developing this very unwelcome complication. Sometimes fever appears from 6 to 24 hours after the injection; but it is of short duration, not exceeding two or three hours, and the temperature never rises beyond 38° C. (100·4° F.). A very few cases have developed dermatitis, but it was so slight it was not even remarked by the patient. After the first injection the bronchitis was usually accentuated. Three patients developed slight albuminuria, but this ceased in a few days and treatment was resumed. I found that by putting the patient on a salt-free diet for three days, including the day of the injection, all these complications were obviated.

In conclusion, I may say that I have gone through all the available international literature on the therapeutics of asthma and have not found that anyone has treated the uncomplicated non-tuberculous disease with our method. In 1932 Dr. A. Dudan reported on 20 cases of tuberculous asthma treated with gold injection of which 17 cases were cured and 3 improved (Schweiz. med. Woch., 1932, lxii., 96).

I am, Sir, yours faithfully,

G. P. G. SOBHY.

Cairo, Egypt, July 16th.

THE CAUSE AND PREVENTION OF MALIGNANT GROWTHS

To the Editor of THE LANCET

SIR,—Our knowledge of the ætiology of cancer is steadily advancing through the long efforts of earnest workers, and prophylactic measures are now being suggested, though some still hold that preventive ideals are as yet only dreams of no scientific value. All, however, recognise the important part played by long, grave irritation, while to me cytology seems to point to a poisoning germ being present and converting into actual cancer a tumour or other local disease previously non-malignant. This is a clinical view. Long experience has led me to the opinion that "cancer is a putrescence, which, having entered into an animal by being swallowed or inhaled, or more rarely having been formed within the patient, finds a weak place in the body, where the blood is unable to cope with it, and, modified by its organic involvement, continues its putrefying career, meeting with resistance, which it finally overcomes, the victim failing through slow putrescent poison." In many cases, however, cures are effected through promptness in diagnosis and wise choice of early treatment.

I had not been long engaged in practice—say 50 years ago—before I was forced to the conclusion that the truth about cancer was not what I had been taught. Our instructors used to teach us that tumours were innocent or malignant, and that they did not change from the former to the latter. Having doubts about this view, I was glad to note that others were forming similar opinions; and soon the name *pre-cancer* began to be given to a weak spot susceptible to infection—a wart, adenoma or other growth, hitherto benign, or a fissure, ulcer, or any site of chronic inflammation. It early suggested itself to me that, as the tendency of cancers was to ulcerate with offensive discharges, the infection in pre-cancer was itself a product of putrescence. If so, what is the other contributing element, locating the position and bringing about the beginning of a cancer? What is the genesis of the first malignant cell? The answer seems to be a previously non-malignant cell becoming unable to resist the putrescent poison, because the blood of the immediately local circulation has lost its power to adequately oxidise and by phagocytosis destroy the invader. The putrescence, having got into the patient, ramifies through the body, and, though beaten off by the vitality of the individual everywhere except in the pre-cancerous place, poisons the latter which is too weak to resist it, and thus is accomplished the beginning of malignancy.

Whether or not the germs of cancer are specific has yet to be proved; but I submit it is possible that one, or more than one, of the vicious germs, already known to us, may so poison a cell in a weak place as to forthwith make it malignant. The point is that lack of power to resist the entering toxin enables the infecting germ to start the change, thus altering the pre-cancer into a malignant growth. If the entering poisonous germ has in itself malignant properties they are not destroyed in the pre-cancer, as they are by the blood, wherever the tissues are healthy, and the same equally applies if the first malignant cell is an embryological freak created by the union of the infecting putrescent germ with one of the cells of the pre-cancer. There appears to me to be nothing unlikely in a putrescent invader causing gastro-enteritis in one person and possibly no complaint at all in another, yet in a third case so poisoning a pre-cancer as to change into a malignant cell one that had been hitherto innocent.

Nature physiologically provides the inhibition of cell growth beyond what is required for the maintenance of health or repair of wounds and injuries, but in a limited area, where this natural power of inhibition is pathologically lost, a cyst or other tumour may grow, often started by a very slight cause. This cell proliferation is primarily quite a separate thing from cancer. Pressure and lack of maintained nutrition may cause in certain tumours necrotic changes which, though fatal in their own way, are neither sarcoma nor carcinoma. The excessive activity of oxygen in the blood of young persons, even in inflammatory and weakened parts, is probably the explanation of their generally escaping malignant diseases.

Some authorities teach that heredity plays an important part in cancer. Striking instances have been recorded in occasional family histories, and further clinical investigation of this aspect of malignancy is much needed. It may be that in good health

powers of capacity to fight enemy germs are normally passed down from parents to children, and that in lack of adequate health the absence of these desirable transmissions is the reason why diseases are, or so often appear to be, hereditary.

Some contend, while others are sceptical, that cancer is infectious. In the case of endangered persons, not immune by adequate youth or freedom from pre-malignancy, I consider that emanations from ulcerating cancers *are* infectious.

Carcinoma is often thought to be an increasing disease, but I do not agree with this view. These growths were rampant 50 years ago, and their great prevalence specially interested me in their nature. Statistics used not to be prepared with the care and accuracy that they now are. When consulted by patients suffering from certain forms of cancer, my experience has been the usual one—I have almost invariably found long neglected local growths, or the patients have been the victims of chronic irritations or slow inflammations which had never received serious treatment. They had also been accustomed to eat too much animal food or their daily consumption of alcoholic drinks had been beyond the limits of ordinary prudence. I have, however, long watched the advancing years of patients following rules of health which I had given them. Those still living are quite free from cancer, while the others, who have passed away, never suffered from malignant growths but died of other complaints or of old age. As soon as a pre-malignant place is suspected, the help of the radiologist and surgeon should be sought. When the truth about cancer comes fully to light, I feel that it will be the outcome of team-work, clinicians making their contribution alongside of the efforts of radiators, surgeons, and laboratory workers.

In conclusion, I am fully conscious that, whether we consider malignancy from the point of view of causation or prevention, it still presents a theme so baffling that none dare venture to dogmatise about it. Only in a spirit of disciplined humility, with slow and halting steps, can we submit opinions to our fellow practitioners for their consideration.

I am, Sir, yours faithfully,

Liverpool, August 1st. GLYNN WHITTLE.

MEDICINE AND DENTISTRY

To the Editor of THE LANCET

SIR,—It has been reported that there are too many newly qualified medical men. It has also been reported that there have been too few students entering the dental schools to ensure an adequate supply of dental practitioners for the near future. Therefore would it not be a good plan for some of the newly qualified medicals to join forces with established L.D.S.'s, and assist and learn from them with a view to practising permanently as dental surgeons, a designation to which they are entitled? These post-graduate students—for that is what they would be—could carry on some medical practice or start a medical practice at the same time, and dispose of it later to a neighbour or other if their dental practice necessitated this. I believe this whole plan would benefit both the dental and the medical professions and the public.

I am, Sir, yours faithfully,

R. MEYNELL PEARSON, L.D.S.

Gillingham, Kent, August 1st.

BUYING CENTRES

To the Editor of THE LANCET

SIR,—In terms of Mrs. Beaton the chief ingredient of a "buying centre" is buyers, and plenty of them. A pudding sparsely compounded of the ingredient from which its name is derived may just as well be called by any other name and at the best is likely to be insipid. The idea of a buying centre is good: a place where, under one roof, a person who wants to buy a chair, for instance, could see, and sit down in, every kind of pew constructed by every chair-maker, would be an ideal rendezvous for chair buyers. But could you get chair buyers to come? Who is to prevent one or two of them from sneaking round the corner to the nearest furniture shop and "doing a deal" there and then, buying centre or no buying centre? A week or two back a popular nobleman opened a buying centre for hospital equipment and supplies which has been established at British Industries House, which is near the Marble Arch. The ceremony was attended by a large and distinguished company; indeed we are informed that more than two thousand persons were present and this is not to be wondered at, since the invitation list was big and good and tea and cakes were served, presumably ad libitum. It was wise advice which Thomas Carlyle gave, that one should not judge of a building while the scaffolding is up, and, having this in mind, we decided to pay a second visit; so a few days after we went again. Shades of Hans Breitmann! "Vhere ish dat barty now?" The caravan had passed on and save for a well-informed and very courteous guide we had a ten thousand square feet hospital ward with its modern beds, modern ventilation, modern lockers, modern lighting system and all its modern wonderfulness literally to ourselves. One recalled the stillness of the mortuary. The silence of the operating theatre was broken only by the questions and answers of the same two persons and the like can be said of the clinical laboratories, the surgeons' rooms and of the whole magnificent suite.

Well, one might say, it is too soon to expect a throng of buyers; it is too soon to hear the babel of the 23 languages which the interpreters can speak. So stepping into the most magnificent lift we had ever seen, walled with plate glass covering pleasing tapestry, so it seemed, we were taken to a higher storey, to the exhibits of medical supplies which have been in situ for quite a little time. Still ourselves and our urbane guide wearing his old school tie, very proper, were in sole possession. Then we went to the club rooms and sat in the buyers' chairs: wonderful chairs reminding us of Egypt and Tottenham Court-road at the same time. But where were the buyers?

An immense amount of thought has been expended on the general design and the selection of the exhibits and it is a most wonderful exhibition of hospital requisites and of the goods used by medical practitioners; it is in a magnificent setting. Obviously much wealth has been dispersed to get together such a comprehensive display in such pleasing surroundings. Everybody concerned with hospital administration should go to the British Industries House, and we think it is the duty of the organisers of this unique buying centre to take pains to ensure that the main ingredient of buying centres, as prescribed by Mrs. Beaton, should be there in abundance.

I am, Sir, yours faithfully,

July 30th. A VISITOR.

*** It is clear that our correspondent does not mean to imply permanent disappointment with the

medical section of the British Industries House, and is perhaps unduly impressed by the difference in the atmosphere and environment found on a gala day and an ordinary working day. It is not to be expected that any crowd of intending purchasers should resort daily to the Marble Arch, but it is to be hoped that a market which appeals to so wide if defined a clientele will establish itself as a regular place of resort. When it is found that so many needs and so many questions are satisfactorily settled by visiting the medical section there should be no want of prospective buyers. —ED. L.

INDUSTRIAL DERMATITIS

To the Editor of THE LANCET

SIR,—I feel sure you will allow me a little space to draw attention to what seem like two important omissions from the article on Industrial Dermatitis by Dr. Sibyl Horner in your last issue, the more so as she writes in her official capacity in the Home Office. It will have been noticed that she makes no reference whatever to the fact that in many, if not most, of the industries associated with the production of industrial dermatitis the workers are exposed to small quantities of carbon monoxide gas in the atmosphere which they inhale. Small quantities of carbon monoxide gas inhaled over a prolonged period have a debilitating effect of an accumulated nature on the blood, and the tissues exposed to irritation being lowered in vitality as a consequence fail to recuperate after each exposure.

A person exposed to a combination of carbon monoxide gas and some other poison such as lead fumes becomes a ready victim to lead poisoning, and, as Dr. Horner knows, I have been able to show that by reducing the amount of carbon monoxide gas to which workers in spelter works are exposed it has been possible to eliminate lead poisoning from a large and important factory (Med. Press and Circ., Nov. 23rd, 1932). Dr. Horner makes no mention of the different responses made to these trade irritants by workers in the several health categories from A1 to C3 to which I have already drawn attention (Brit. Med. Jour., June 2nd, 1934, p. 1008). The C3 type falls a victim more readily than one belonging to the A1 category, and this surely is a point of very great importance in more ways than one.

The presence of CO gas is important because some of these cases of dermatitis are but the prelude to industrial cancer, which I have shown occurs only amongst workers who have been exposed to the inhalation of CO gas over prolonged periods of time (Med. Press and Circ., August 30th and Sept. 20th, 1933). I am, Sir, yours faithfully,

Swansea, August 7th. G. ARBOUR STEPHENS.

MEDICINE AND THE LAW

Claims by Infants

DURING the judicial sittings which ended last week an unusual point was taken on a claim for alleged negligence in respect of treatment in a L.C.C. hospital. In October, 1932, a number of infants entered the hospital. Through their parents they complained that at the hospital they contracted a disease during that month by reason, it was stated, of the negligence, unskilfulness, and breach of duty of the medical superintendent. On Jan. 31st, 1934, they took out a writ claiming damages from the L.C.C. as the responsible authority and from the medical superintendent personally. The lapse of time before the writ was issued is important. The Public Authorities' Protection Act of 1893 sets a six-months' time-limit on the bringing of actions against a public authority for any alleged negligence in the execution of a public duty or of an Act of Parliament. The L.C.C. is undoubtedly a public authority within this protection and has often defended itself by pleading the statute. The plaintiffs on this occasion sought to get round the statute by arguing that it did not apply to infants. They referred to the old Statute of Limitations (of 1623) which expressly reserves the rights of infants until they come of age. Thus a preliminary question of law was brought before Mr. Justice Roche for decision—was the Public Authorities' Protection Act of 1893 no protection against a claim by a person under age? The judge held that the infants' claim was barred; the 1893 Act made no exception in favour of infants and the 1623 Act was a different affair altogether. He did not, however, dismiss the action outright; he merely struck out the statement of claim and thus left the plaintiffs free to begin again. They can now raise any matter which has happened within six months of the writ. If, therefore, they are still uncured of the effects of the disease and have consequently suffered damage within the six-months period, they can shape their claim afresh accordingly. The L.C.C. will presumably rely upon the usual defence that it did not itself render the alleged unskilful treatment and that its duty to the plaintiffs was finished when it appointed a suitable medical officer.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

THE following appointments are notified:—

Surg. Capts. J. P. Shorten to *Drake*, for Plymouth Hosp.; G. F. Syms to *Victory*, for Haslar Hosp.; and H. M. Whelan to *Pembroke*, for Chatham Hosp.

Surg. Comdrs. G. Kirker to *Drake*, for R.N.B.; W. A. Jolliffe to *Cairo*; T. N. D'Arcy to *Rodney*; L. W. Gemmell to *Pembroke*, for Chatham Hosp.; M. S. Moore to *Renown*; L. S. Goss to *Drake*, for R.N.B.; and M. B. Devane to *Victory*, for R.N.B., and to *Resource* on recommg.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. T. C. Larkworthy to be Surg. Lt.-Comdr.

Proby. Surg. Lt. (D) A. B. Bateman to be Surg. Lt. (D).

The following appointments are notified:—

Surg. Lt.-Comdrs. W. H. Butcher to *Vernon*; D. C. Wilson to *Victory*, for Haslar Hosp.; and S. B. Borthwick to *Victory*, for R.N.B.

ROYAL ARMY MEDICAL CORPS

Capt. A. E. Campbell to be Maj.

Lt. (on prob.) D. M. Ahern is restd. to the estabt.

ARMY DENTAL CORPS

Capt. A. H. Kay to be Maj. (prov.).

TERRITORIAL ARMY

Lt.-Col. D. S. Sutherland to be Bt. Col. and retires on completion of tenure of comd. and retains his rank, with permission to wear the prescribed uniform.

Maj. J. F. O'Grady to be Lt.-Col., and to comd. the 12th (2nd Western) Gen. Hosp.

Capts. W. Lumley and J. Cohen to be Majs.

INDIAN MEDICAL SERVICE

Col. G. D. Franklin retires.

Col. C. W. F. Melville, K.H.P., to be Maj.-Gen.

Capt. C. V. D. Rose to be Maj.

Capts. (on prob.) to be Majs. (on prob.): P. V. Karamchandani and R. K. Misra.

Lt. (on prob.) V. M. Albuquerque to be Capt. (on prob.).

Temp. Lt. Ilahi Bakhsh to be Temp. Capt.

The promotion of the undermentioned officers as Capts. is confirmed: B. D. Khurana, E. H. Lossing, R. J. Jarvie, M. Sendak, and G. W. Miller.

Ilahi Bakhsh to be Capt. (on prob.).

DEATHS IN THE SERVICES

Major-General Sir William Donovan, late A.M.S., who died at his home in Kensington on the last day of July, saw much active service in Afghanistan, in S. Africa, and in India, and during the late war was employed in the responsible and strenuous work of allocating and despatching wounded soldiers who arrived at Southampton.

The son of the late James Donovan, Staff Surgeon, R.N., Sir William Donovan was born on Dec. 27th, 1850, and received his early education at Fermoy College. He afterwards studied medicine at Trinity College, Dublin, obtained the licenciateship of the Royal Colleges of Physicians and Surgeons of Ireland in 1871, and in the following year entered the Army Medical Service. In 1879–80 he served in the Afghan War (medal) and in 1881 was employed in the Boer War, while in 1895 he was with the Chitral Relief Force (despatches and medal with clasp). During the S. African War of 1899–1902 he was P.M.O. of the Cavalry Division (despatches, Queen's medal with six clasps, King's medal with two clasps and the C.B.). He then returned home and became P.M.O. of the 4th Division, Salisbury Plain. From 1905 to 1908 he was P.M.O. in S. Africa, was afterwards appointed P.M.O. of the Northern Command, and retired in 1909. Throughout the late war he was employed as Director of Medical Services, Embarkation, and the strenuousness of his work may be gathered from the fact that although he had passed the age of 60 by several years he despatched sometimes more than 23 trains a day. He received his promotion to K.C.B. in 1917, in which year he became major-general on the retired list. He was a Commander of the Order of the Crown of Belgium.

Sir William was twice married, his first wife being Anne, widow of the late Hopewell Morrell, of Moulsford Manor, Berks, who died in 1925. In 1931 he married Annie Lombard Becher, daughter of Mr. R. W. de la Cour, barrister-at-law.

PANEL AND CONTRACT PRACTICE

Ophthalmic Benefit

ONE of the most important decisions at Bournemouth in July was concerned with the progress of the National Ophthalmic Treatment Board in the administration of ophthalmic benefit—an additional benefit under the National Health Insurance Acts. All additional benefits are administered by approved societies—not by insurance committees, who are only responsible for medical benefit—under the Ministry of Health regulations. It will be remembered that in the early days of the Act ophthalmic surgeons agreed to examine insured patients requiring specialist treatment for one guinea, to which had to be added the cost of glasses ordered. The societies said they could not afford to pay this fee except in very exceptional cases, with the result that most insured persons—in spite of their insurance doctor indicating that he wished an ophthalmic surgeon to be consulted—went to sight-testing opticians who examined and supplied glasses at a very much lower fee. In cases of difficulty these insured persons were sent by the optician either to an ophthalmic surgeon, privately or by direction of the society, or to the out-patient department of some ophthalmic hospital. The next step was the demand by the sight-testing opticians for official recognition of their status under the Act. When the ophthalmic committee of the British Medical Association objected to this recognition being granted they were warned that the specialist fees could not be borne by approved societies and were in fact too high for an industrial population. It was then agreed to establish a national eye service, to be worked by the National Ophthalmic Treatment Board, with fees and charges for glasses within the reach of insured persons. Every patient was to be examined by an eye specialist, recognised by the ophthalmic committee of the B.M.A. as having the necessary qualifications, at a fee of half a guinea, and the glasses were to be dispensed at a moderate charge by opticians who did not themselves undertake sight-testing.

Progress was slow at first. Approved societies did not jump at the scheme; patients were in the habit of going to the sight-testing opticians. Money had to be borrowed from B.M.A. funds to enable the Board to carry on. There were not enough dispensing opticians available to staff the various centres; some ophthalmic surgeons were in the habit of receiving patients from sight-testing opticians, who in turn expected to have patients sent to them for glasses. The tide was however turned by a regulation requiring a society to grant ophthalmic benefit through the Board if the insured person applied for it (and was entitled to have it). In the last year there has been an increase of 29 per cent. in the number of persons examined by ophthalmic specialists, with a total for the twelvemonth of 60,000, the vast majority of whom would otherwise have received treatment at a hospital or at a sight-testing opticians. No call was made on the B.M.A. guarantee in 1933, and the Board repaid a sum of £230 in 1934.

It should not be overlooked that even now an insurance doctor is not permitted in his certificate that so-and-so requires a special examination of his eyes, to say anything about the National Ophthalmic Treatment Board. He can write on a separate piece of paper, for the patient's benefit and information, particulars of how to use the national eye service in his area, the specialist he would like him to consult and the address of the dispensing optician to whom he should go in the first instance; but it must be the patient himself who writes to the approved society expressing his wish to take the benefit through the Board. The sight-testing opticians are naturally endeavouring to combat this attack on their preserves. Mr. Bishop Harman told the Bournemouth meeting that at Southampton the opticians paid them the compliment of imitating as exactly as they possibly could the details of the scheme, even to the initials and the form of the handbills. In a circular issued at Leicester the opticians said: "It is felt that the interests of the public would be best served by coöperation between the medical profession and those opticians who are qualified as refractionists *with ability to recognise pathological conditions needing medical attention*." A number of medical men taking cases under the scheme were asked for information of a straight run of persons who had come to them without previous reference to opticians; of 8000 cases sent to 39 specialists, 63 per cent. required nothing but glasses, 30 per cent. something more than glasses, 6 per cent. were not in need of glasses but did require something else, and 1 per cent. had nothing discoverably wrong—a total of 37 per cent. who were something more than refraction cases. It is known that sight-testing opticians do not refer more than 10 per cent. of their cases to ophthalmic surgeons. A simple calculation suggests that in one case out of four they miss something else connected with the eye, even when—as cannot be assumed—the glasses ordered are correct. Insurance practitioners can therefore be satisfied that they are doing the best for their patients by making certain that they apply for ophthalmic benefit, when required, through the National Ophthalmic Treatment Board.

PUBLIC HEALTH

"Fit for Habitation"

UNDER the first section of the Housing Act 1925 there is an implied condition in the letting contract of dwelling-houses (below a certain rental) that the house is, at the commencement of the tenancy, in all respects reasonably fit for human habitation, and an implied undertaking that the house will be kept by the landlord in the same condition during the tenancy. It would, of course, solve one side of the housing problem if these implications were always fulfilled. The borough of Kensington, as we recently noted, has gone a long way towards making sure that landlords do fulfil their part of the bargain. Unfortunately the legal provisions relating to the maintenance of dwelling-houses in a fit condition are scattered through various statutes. In order to help local authorities not to overlook any possible direction in which watchfulness might help to secure decent habitation the Ministry of Health has issued a little pamphlet (No. 6825, H.M. Stationery Office, 2*d.*) entitled "Housing," summarising the principal provisions of the Housing and Public Health Acts in relation to the maintenance of dwelling-houses in a reasonably fit condition for human habitation.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 28TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2539; diphtheria, 1118; enteric fever, 22; acute pneumonia (primary or influenzal), 500; puerperal fever, 46; puerperal pyrexia, 113; cerebro-spinal fever, 18; acute poliomyelitis, 16; encephalitis lethargica, 12; dysentery, 8; ophthalmia neonatorum, 87. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on August 6th–7th was as follows: Small-pox, 0; scarlet fever, 1548; diphtheria, 1473; measles, 650 (last week 736); whooping-cough, 271; puerperal fever, 29 mothers (plus 7 babies); encephalitis lethargica, 266; poliomyelitis, 1; "other diseases," 284. At St. Margaret's Hospital there were 19 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (1) from enteric fever, 13 (2) from measles, 7 (0) from scarlet fever, 13 (1) from whooping-cough, 30 (4) from diphtheria, 50 (17) from diarrhœa and enteritis under two years, and 15 (2) from influenza. The figures in parentheses are those for London itself.

Portsmouth reported the only death from enteric fever. Only two towns (Liverpool and Sheffield) had as many as two deaths from measles. Whooping-cough proved fatal in 3 cases at Leeds, 2 each at Liverpool and Nottingham. Three fatal cases of diphtheria were reported from Leeds and Middlesbrough. Liverpool with 5 showed the highest number of deaths from diarrhœa; Manchester and Birmingham each 3.

The number of stillbirths notified during the week was 251 (corresponding to a rate of 38 per 1000 total births), including 37 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Factory Inspection and Public Health

IN the House of Commons on July 31st, on the motion of adjournment for the summer recess, Mr. RHYS DAVIES called attention to the report of the Chief Inspector of Factories and Workshops, one of the most human documents ever enclosed in blue covers. The factory department of the Home Office had just celebrated its first century of existence and he hoped that it would continue to pay as much attention to the negligent and delinquent employer. Machinery was travelling faster than ever, rationalisation in factories and workshops had nearly reduced the operative to an automaton, and the demand for increased production was proceeding apace. In this process the factory inspector must be equipped by the State with all the weapons to which he was entitled. A large number of young persons were working too hard and too long, whilst hundreds of thousands of their fellows were standing idly by. He asked whether the time had not now arrived when the department should conduct an inquiry into the effect of the six-loom system on the health and physique of the operatives. He was surprised to read of a high incidence of chest and bronchial troubles amongst the workers in malt houses. These malt houses ought to be brought up to date so that these diseases should not affect the workpeople. They were told that skin cancer was the most menacing of our industrial diseases and that the incidence was highest in mule spinning. It was strange that while nearly all the other diseases—consumption and infectious and contagious diseases—were coming under medical control, the same could not be said of the industrial diseases. The total number of accidents had increased in 1933 as compared with 1932. The chief inspector expressed the view that more accidents had occurred because men had been brought into the factories who had been unemployed for long periods and who were consequently unable to adapt themselves to conditions of employment. He was himself inclined to the view that the speeding-up process in industry had been largely responsible.

Mr. DAVID GRENFELL called attention to the Silicosis Orders. He said that a large number of people had been disabled by silicosis and there was a very large number of deaths while no compensation was obtainable either by the disabled workmen or in case of death by their dependents. The essential condition to safeguard the interests of the men was for all reference to processes and to conditions of labour to be eliminated from the Order, leaving as the sole condition that the man should have been employed in a coal mine and should have been certified to be disabled by silicosis. If they did not get that simple essential condition they would again find themselves involved in a series of legal pitfalls.

MEDICAL CRITICISM

Sir FRANCIS FREMANTLE said the reorganisation of the department brought about by the late Sir Arthur Whitelegge raised the health side of the work to a remarkable pitch of efficiency. Many people considered it essential that this work should now be brought under the one roof with other health departments. Closer coöperation was required between departments. Relationship had not yet been properly established between factories and workshops on the one hand and schools on the other. Children entering factories and workshops at an early age should be properly guided into their new life.

Certifying factory surgeons were in some cases distinguished men who were making a special study of their subject, but in many cases the appointment had been given to a man in general practice who had no special training in the diseases of occupation or the prevention of diseases. The ordinary medical education was provided in hospitals by men who were engaged in the treatment of individual diseases and very little provision was therefore made for teaching prevention, especially the prevention o

industrial disease or the conditions in the factories. Some pressure should, he thought, be brought by the Government on the General Medical Council to secure that the tendency of medical education should be more in this direction.

He felt that Mr. Rhys Davies had laid more stress on the deficient success that had resulted from the work of the factory surgeons, the medical officers, and the whole factory system in regard to the prevention of industrial disease. If risks were to be reduced to a minimum before any new process or industry was allowed to arise it would not be possible to get the fresh employment that was required. They must face risks. A large number of new industries and processes were being discovered as a result of research in industry and fresh industrial diseases would constantly arise which required vigilance on the three sides of industry.

UNDER-SECRETARY'S REPLY

Captain CROOKSHANK said that as soon as new symptoms of industrial disease were discovered all the skill that could be found was brought to bear to try and find remedies. At the end of it one was still left with the fact which struck one on practically every page of this report and that was the almost incredible number of avoidable accidents. He assured Mr. Davies that the strength of the inspectors' department was to be reviewed before the next estimates were presented. As to a medical inquiry into the more-looms-per-weaver system they had not yet sufficient medical data for scientific investigation. The Home Office had taken up the question of dust trouble in malt houses with a view to preventing the inhalation of dust. He did not think they could make the deduction that there was a tendency for skin cancer to increase. Because the figures went up it did not necessarily mean that there were more cases. It probably meant that cases were notified more quickly and earlier. The increase in the number of cases of anthrax from 2 to 10 had nothing to do with the Liverpool disinfecting station; they arose entirely from hides and skins. The Home Secretary had now completed his review of the proposals submitted to him for the amendment of the silicosis compensation scheme. Last week he sent to the Mining Association and the Miners' Federation of Great Britain a memorandum indicating his conclusions. Limitation to particular underground processes gave rise to serious difficulties and he proposed to expand the scheme so as to include underground employment generally in coal-mines. As regarded the increase in industrial accidents it must be the case that as employment increased, unless more attention was paid to safety devices, there would be more accidents. By the law of averages before Parliament met again there would have been something approaching 30,000 accidents in industry and 150 people would have lost their lives. That fact put considerable responsibility on everyone concerned. These matters were largely matters of education. If only more would come to the Home Office Industrial Museum and see the kind of safety devices which up-to-date factories could employ to avoid accidents he thought they might get an improvement.

MEDICAL NEWS

English Conjoint Board

At the recent final examination of the Board the following candidates were approved in the subjects indicated, but are not yet eligible for the diplomas of the colleges:—

Pathology.—B. Agranat, Guy's; H. F. Anderson, Camb. and St. George's; T. G. Armstrong and R. A. J. Asher, Lond.; Minnie Atkin, King's Coll.; E. C. Atkinson and D. S. D. Barber, St. Bart.'s; A. J. E. Barlow, Leeds; A. H. Barwell, St. Georges; P. W. G. Baxter, Guy's; W. M. Beattie, Camb. and Liverp.; R. D. I. Beggs, Camb. and Middx.; A. L. W. Bell, Guy's; G. Blackburn, Camb. and St. Bart.'s; D. M. Blomfield and G. L. Bohn, St. Bart.'s; A. P. Booth, Lond.; B. B. Botha, St. Bart.'s; P. I. Boyd and Margaret Brodigan, Univ. Coll.; H. S. Brodribb, Oxon. and St. Bart.'s; E. A. Brown, St. Mary's; K. P. Brown, L. H. Buckland, and A. Z. Butt, St. Bart's; H. B. C. Carter-Locke, St. Thos.; T. D. Chablani, St. George's; J. Charnley, Manch.; L. J. Clapham, St. Mary's; J. V. Clark, Guy's; W. E. Clarke, Charing Cross; P. E. G. Clements, St. Bart.'s; G. H. Collier, Manch.; W. T. Cooke, Camb. and Birm.; M. Cohen, King's Coll.; E. C. Cordeaux, Middx.; J. O. Creighton, St. Thos.; T. Csato, Middx.; J. V. Dacie, King's Coll.; D. A. Davies, Guy's; Hilda S. F. de Peyer, King's Coll.; W. H. H. J. de Wytt, Dublin; J. F. Dow, Camb. and Middx.; A. J. Dubinsky, St. Mary's; J. E. Elliott, Guy's; G. D. Elphick, Camb. and St. George's; E. H. Evans, St. Bart.'s; E. W. R. Fairley, St. Thos.; T. S. R. Fisher, Camb. and Birm.; R. J. Force-Jones, St. Bart.'s; O. P. Frank, St. George's; C. M. Fysh, St. Thos.; L. R. Gardner, Camb. and Middx.; R. C. Garman, Oxon. and Birm.; C. E. Garson, Madras and W. Lond.; J. Geller, Westminster; V. R. Ginde, Lond.; Muriel C. Goodchild, Roy. Free; J. L. Gordon, Middx.; S. A. Greenwood-Penny, St. George's; C. U. Gregson, Camb. and Liverp.; K. L. Grogono, Lond.; D. R. Hanbury, Middx.; J. R. G. Harris, Camb. and Lond.; R. V. Havard, Univ. Coll.; G. W. Hayward, St. Bart.'s; T. C. Henry, Middx.; R. C. Hill, Guy's; W. A. T. Hill, Liverp.; K. F. W. Hinson, St. Mary's; E. D. Hoare, Camb. and St. Mary's; P. W. Houghton, St. Bart.'s; Ruth Hill, King's Coll.; A. T. Hunt, Univ. Coll.; M. Hynes, Middx.; W. L. Isaac, St. Mary's; R. F. Jarrett, Camb. and St. George's; G. O. Jelly, Oxon. and Guy's; J. D. Jenkins, Middx.; I. ap D. Jones, Cardiff; S. A. Jones, St. Bart.'s; A. E. Jowett, Bristol; R. Kauntze, Camb. and St. George's; A. H. A. Koi and A. Lesnick, Univ. Coll.; D. C. Lavender, Camb. and Middx.; J. H. Lawrence, Univ. Coll.; B. Lee, Manch.; F. H. Lee and H. A. Leggett, Guy's; H. T. Levi, Leeds; D. Levine, Cape and St. Bart.'s; H. Levitt, Charing Cross; C. A. Lillicrap, Guy's; W. L. Lister, St. Mary's; G. M. Lloyd, R. Lyons, and J. C. McAvoy, St. Bart.'s; S. M. Mankodi, Camb. and Univ. Coll.; W. N. Mann, Guy's; M. S. Marks, Glasg.; M. Marmelstein, Dublin; J. I. C. Mason, St. Bart.'s; J. H. Mayer, Guy's; H. S. Mellows, King's Coll.; L. Merrill, Guy's; B. M. Merriman, St. Bart.'s; R. A. Morea, Lond.; Elizabeth C. Morris, Roy. Free; D. F. E. Nash, St. Bart.'s; E. Nashed, Cairo and Edin.; J. G. Nel, St. Bart.'s; A. R. H. Oakley, Middx.; K. J. O'Connor Manch.; W. V. Owen, Camb. and Westminster; Maude A. Parfitt, Univ. Coll.; W. S. Parker, Manch.; A. Pearlman, Middx.; F. R. Pepper, Oxon. and St. Thos.; J. B. Phillips, Cardiff; R. M. G. Pole, St. Bart.'s; O. D. Popat, Lond.; F. O. Potter, Guy's; M. R. Preston, Middx.; D. A. Prothero, St. Bart.'s; P. Ramchander, Manch.; G. R. Rawlings, St. Thos.; B. Reeves, Lond.; J. Revans, Middx.; B. Robbins, King's Coll.; Hilda Roberts, Liverp.; H. D. H. Robinson and C. G. Roworth, Univ. Coll.; L. M. Rubein, Lond.; J. P. Salkield, Univ. Coll.; H. V. Sansom, St. Bart.'s; C. W. A. Searle, King's Coll.; A. Shapiro, Univ. Coll.; N. S. Shtetinin, Manch.; A. H. M. Siddons, Camb. and St. George's; G. G. Smith, St. Thos.; D. P. Stevenson, Guy's; L. D. Stone, Manch.; G. R. Taylor, St. Bart.'s; F. Taylor, Guy's; H. C. Thomas, Lond.; J. W. Todd, Middx.; R. C. H. Tripp, Camb. and St. Thos.; H. J. Wade, Manch.; A. R. M. Waffarn, Ceylon and King's Coll.; W. T. Wales, Cardiff; H. A. Wallace, Camb. and Univ. Coll.; R. L. Walmsley, Camb. and Leeds; G. W. Ward, Manch.; A. G. Waters, Cardiff; Catherine M. Whitestone, Univ. Coll.; N. Whittaker, Camb. and Univ. Coll.; E. D. H. Williams, Guy's; S. L. Williams, Cardiff; T. M. Williams, Oxon. and St. Thos.; I. N. Winer, Middx.; P. M. Wright, St. Bart.'s; R. F. Wyatt, St. Thos.; A. R. Yates, Lond.; Winifred F. Young, Camb. and King's Coll.

Medicine.—E. M. Abelson, Leeds; C. Anderson, St. Bart.'s; R. A. J. Asher, Lond.; D. Bhatia, Punjab and W. Lond.; Svarna L. Bhatia, Camb. and Roy. Free; P. D. Bhatt, Lond.; G. Blackburn, Camb. and St. Bart.'s; D. M. Blomfield and B. B. Botha, St. Bart.'s; A. S. Bullough, Manch.; C. Campbell, Univ. Coll.; W. B. Clegg, Guy's; P. E. Cresswell, Oxon. and Guy's; E. R. Dansie, King's Coll.; D. A. Davies, Guy's; A. J. S. de Freitas, St. Bart.'s; Shanti Devi, Roy. Free; G. G. W. Elwell, Camb. and Univ. Coll.; E. A. Evans, Camb. and King's Coll.; E. H. Evans, St. Bart.'s; R. Farncombe, St. George's; A. Fearnley, King's Coll.; B. W. Fickling, St. George's; W. J. Finegold, Charing Cross; Joan I. Franklin-Adams, Roy. Free; P. K. Guha, West Lond.; A. Harris, Manch.; E. B. Harvey, St. Thos.; C. A. Hinds Howell, Oxon. and St. Bart.'s; P. W. Houghton, St. Bart.'s; F. Janus, Manch.; G. O. Jelly, Oxon. and Guy's; A. H. Khan, Birm.; J. A. Lewis, St. George's; S. Lilienfeld, St. Mary's; J. R. Miles, Cardiff; Elizabeth C. Morris, Roy. Free; J. F. Morris, Guy's; R. F. Mowll, King's Coll.; S. Mullick, St. Bart.'s; Edith A. S. Parry-Evans, Roy. Free; H. F. Patrick, St. Thos.; Mary Paulosky, West Lond.; O. D. Popat, Lond.; Kathleen G. Priestman, Roy. Free; J. H. Rees and K. E. O. Ringdahl, St. Bart.'s; H. D. H. Robinson, Univ. Coll.; L. M. Rubein, Lond.; J. Schofield, St. George's; B. N. Sinha, Middx.; A. S. R. Sinton, Westminster; J. A. H. Smart, King's Coll.; L. W. Spratt, Camb. and St. Thos.; G. R. Taylor, St. Bart.'s; I. K. Thomas, Lond.; T. G. Tregaskis, St. Bart.'s; M. M. Waldman, Westminster; W. T. Wales, Cardiff; W. Warren, Camb. and St. Bart.'s; N. Whittaker, Camb. and Univ. Coll.; and E. G. K. Williams, Camb. and St. Bart.'s.

Midwifery.—B. Agranat, Guy's; G. W. Alderman, Leeds; H. R. Arthur, St. Thos.; E. Ashman, Guy's; Minnie Atkin, King's Coll.; F. A. S. Austen, Middx.; P. H. Ball, E. B. D. Bangay, and A. B. Barbour, St. Bart.'s; A. J. E. Barlow, Leeds; G. S. Barradell-Smith, Middx.; A. L. W. Bell, Guy's; R. Bevan, Oxon. and St. Thos.; B. E. Blair, St. Thos.; M. H.

Bob, St. George's; S. G. Brook, Camb. and St. Thos.; A. F. Bryson, Lond.; L. H. Buckland, St. Bart.'s; W. P. Cargill, Manch.; H. B. C. Carter-Locke, St. Thos.; J. V. Clark, Guy's; M. Cohen, King's Coll.; S. Cohen and D. Craig, St. Bart.'s; T. Csato, Middx.; J. V. Dacie, King's Coll.; A. P. Dale-Bussell, Guy's; E. R. Dansie, King's Coll.; B. P. Datta, Calcutta; Debora David, Roy. Free; J. N. Deakin, Birm.; W. H. H. J. de Wytt, Dublin; J. F. Dow, Camb. and Middx.; A. J. Dubinsky, St. Mary's; F. C. Durbin, St. Thos.; H. Dyson, Liverp.; K. G. Eckersley, Leeds; G. B. Ebbage, Guy's; G. D. Elphick, St. George's; I. Finer, Guy's; Barbara J. Fisk, Roy. Free; W. P. Fitch, Guy's; Margaret FitzHerbert, Roy. Free; R. F. Fleming, Bengal and St. Mary's; J. R. Forbes, Guy's; A. H. T. F. Fullerton, Camb. and Birm.; S. E. Furber, Oxon. and St. Bart.'s; J. Geller, Westminster; J. E. Giesen, Guy's; P. Glazer, King's Coll.; B. M. Goldsworthy, St. Thos.; C. N. Gosse, Camb. and St. Mary's; K. L. Grogono, Lond.; P. Grugeon, King's Coll.; J. L. Haber, St. Mary's; H. L. T. J. Hardwick, Charing Cross; J. R. G. Harris, Camb. and Lond.; J. P. Harrison, Lond.; G. W. Hearn, St. Thos.; T. C. Henry, Middx.; T. H. Hills, Guy's; E. D. Hoare, Camb. and St. Mary's; J. Holden, Leeds; C. S. Humphries, Camb. and St. Thos.; C. A. Hutt, St. Mary's; W. G. Hutton, Camb. and Leeds; M. Hynes, Camb. and Middx.; N. W. Irish, Guy's; J. E. Ives, Camb. and Univ. Coll.; E. H. Jones, Guy's; I. ap D. Jones, Cardiff; A. E. Jowett, Bristol; R. Kauntze, Camb. and St. George's; I. Klinger, King's Coll.; F. J. D. Knights, Middx.; A. Lasnick, Univ. Coll.; B. Lawson, Guy's; H. Levitt, Charing Cross; J. F. Lockwood, Guy's; Dorothy K. Lopez, Roy. Free; M. A. Loutfy, Cairo and St. Mary's; P. S. Luffman, St. Thos.; J. C. McAvoy, St. Bart.'s; H. M. McGladdery and R. McGladdery, St. Bart.'s; Margaret I. McHaffe, Roy. Free; E. M. Mankin and J. I. C. Mason, St. Bart.'s; J. H. Mayer, Guy's; Dorothy V. Mazel, Roy. Free; W. T. M. Moar, Lond.; L. F. Muldavin and S. J. Navin, St. Mary's; R. J. Niven, St. Thos.; C. W. F. Outred, Guy's; W. O. G. Paget, St. Bart.'s; G. E. Paxon, Guy's; A. D. Petro, Camb. and St. George's; J. B. Phillips, Cardiff; T. D. Pilcher, Camb. and St. Thos.; G. B. S. Pimblett, Westminster; A. R. Pope, Camb. and St. Bart.'s; A. E. K. Price, Middx.; Kathleen G. Priestman, Roy. Free; M. S. M. Rayner, Camb. and St. Thos.; B. Reeves, Lond.; L. Reuben, Roy. Free; J. Revans, Middx.; Hilda Roberts, Liverp.; W. W. Roberts, Birm. and Sheff.; G. S. Robinson, Camb. and Liverp.; M. G. Robinson, Birm.; S. Rosof, St. Mary's; C. G. Roworth, Univ. Coll.; R. G. Samuel, Camb. and St. Bart.'s; S. V. Sansom, St. Bart.'s; R. H. Shah, Manch. and Lond.; A. Shapiro, Univ. Coll.; P. N. Shutte, St. Thos.; A. H. M. Siddons, Camb. and St. George's; A. Skolar, Middx.; A. Smiter, St. Mary's; H. S. C. Smith, Middx.; B. P. Stone, Camb. and King's Coll.; N. K. Stott, Oxon. and St. Thos.; J. H. E. Summerhill, Camb. and Univ. Coll.; K. Tatz and F. Taylor, Guy's; J. W. Todd, Middx.; T. G. Tregaskis, St. Bart.'s; J. L. Treneman, Liverp.; J. D. B. Vaile, St. Thos.; J. E. G. Vincenzi, St. Thos.; A. R. M. Waffarn, King's Coll.; A. B. Wayte, Guy's; Catherine M. Whitestone, Univ. Coll.; N. Whittaker, Camb. and Univ. Coll.; C. W. K. Willard, Univ. Coll.; I. D. C. Williams, Guy's; S. P. N. Williams, Bristol; and H. L. Wolfe and J. G. Youngman, St. Bart.'s.

Surgery.—J. Adler, Charing Cross; C. Anderson, St. Bart.'s; G. T. Balean, Guy's; D. M. Blomfield and D. M. Bressler, St. Bart.'s; Margaret Brodigan, Univ. Coll.; R. Bruce, King's Coll.; A. F. Bryson, Lond.; A. S. Bullough, Manch.; Margaret M. B. Carey, Roy. Free; W. P. Cargill, Manch.; R. S. Carpenter, Lond.; A. H. Casson, St. Bart.'s; R. F. Courtin and J. O. Creighton, St. Thos.; T. Csato, Middx.; S. M. Davidson, Camb. and St. Mary's; D. W. Davies, Cardiff and Middx.; T. F. Davies, Guy's; E. W. Dunkley, Lond.; R. S. Ellis-Brown, Guy's; M. Epstein, St. Bart.'s; I. A. Feldman, Leeds; Joan I. Franklin-Adams, Roy. Free; P. R. Gavin, St. Thos.; Muriel C. Goodchild, Roy. Free; W. E. Hadden, St. Thos.; J. P. Harrison, Lond.; R. B. Heisch, Camb. and Middx.; H. F. G. Hensel, Lond.; C. F. Heys and R. C. Hill, Guy's; G. S. Hodge, Univ. Coll.; D. A. B. Hopkin, St. Mary's; C. Houghton Brown, St. George's; G. O. Jelly, Oxon. and Guy's; D. V. John and W. H. Jones, Camb. and Univ. Coll.; M. D. Kiddon, St. Mary's; F. H. Lamb, St. Thos.; J. H. Lawrence, Leeds; V. Lewis, St. Mary's; P. T. Liem, St. Thos.; G. M. Lloyd, St. Bart.'s; O. Lloyd, Middx.; I. B. McCrae, Charing Cross; P. E. C. Manson-Bahr, Camb. and Lond.; E. C. Marsh, Edin.; F. H. Masina, Camb. and St. Bart.'s; K. M. Mayall, Camb. and St. George's; A. B. G. Mein, Westminster; S. G. Mohler, St. Mary's; R. L. Moody, St. Thos.; Elizabeth C. Morris, Roy. Free; J. H. Moseley and J. T. Murray-Aynsley, Camb. and St. Thos.; Anisa Nagi, Roy. Free; S. Paul, Cape and Guy's; A. L. Peers, Camb. and Guy's; Lillian M. Pickford, Univ. Coll.; A. R. Pope, Camb. and St. Bart.'s; Kathleen G. Priestman, Roy. Free; A. W. Probert, Univ. Coll.; J. J. C. Rainsbury, Sheff.; J. Rapoport, St. Mary's; M. S-M. Rayner, Camb. and St. Thos.; J. W. Redgate, Middx.; M. G. Robinson, Birm.; J. S. Ross, Camb. and St. Thos.; B. D. Sachdeva, West Lond.; H. H. Samson, Lond.; J. K. Samuel, St. Thos.; B. J. Shaw, Birm.; C. W. T. Shuttleworth, Guy's; J. Simon, Lond.; J. H. E. Summerhill, Camb. and Univ. Coll.; C. Tetlow, Manch.; Constance M. Vallange, Roy. Free; H. A. Wallace, Camb. and Univ. Coll.; J. D. S. Watling, Univ. Coll.; F. H. Weston, Guy's; D. O. Wharton, Manch.; C. W. K. Willard, Univ. Coll.; and J. G. Williams, Westminster.

Royal College of Physicians of London

Licences to practise (additional to those recorded in our last issue) were on August 2nd conferred on the following candidates:—

E. J. J. Borges, Bombay and West Lond.; F. I. Evans, Camb. and Guy's; J. R. Nassim, Oxford and St. George's; H. N. Perkins, St. Mary's; and F. F. Rundle, Sydney.

Royal College of Surgeons of England

A meeting of the council of the college was held on August 2nd, with Sir Holburt Waring, the president, in the chair. Mr. L. R. Broster, surgeon to Charing Cross Hospital, was elected a member of the court of examiners in the vacancy caused by the resignation of Mr. Claude Frankau. Dr. Ernest Bulmer, Dr. A. H. Douthwaite, Dr. R. A. Hickling, and Dr. R. A. Rowlands were elected examiners in medicine for the L.D.S.

Mr. Kennedy Cassels, M.A., F.C.I.S., was appointed secretary to the college in succession to Mr. S. Forrest Cowell, who retires at the end of September. Mr. T. W. P. Lawrence was reappointed acting pathological curator for a further period of six months, and Mr. F. H. Bentley was appointed Bernhard Baron scholar during the current quarter. Mr. Wilfred Trotter, F.R.S., was reappointed a member of the executive committee of the Imperial Cancer Research Fund.

Diplomas of membership were granted to the candidates whose names were given last week (p. 286) as recipients of the L.R.C.P., and to those who received the diploma of the Royal College of Physicians on August 2nd. Licences in dental surgery were granted to the following candidates successful in the recent examination:—

Naga M. A. Abul, A. P. Austin, K. C. Baker, A. L. H. Bakry, C. F. Ballard, R. O. Barber, Beatrice M. Bell, Shaker Botros, J. C. Carr, F. L. Ferris, W. R. Foreman, Marjorie G. Frost, Harry Gill, D. A. G. Greensted, Werner Grünthal, A. A. Hassan, A. G. Heberlein, Herman Kanter, J. H. Kendall, J. B. Knight, Mitchel Lang, W. B. Lewis, W. J. Littleton, R. W. Lovel, Benito Machado, J. C. Manchanda, L. C. Mandeville, R. S. Martin, C. E. A. Mason, A. E. W. Miles, H. E. Nathoo, D. D. Nogid, T. C. O'Flanagan, G. B. Oliver, E. J. Parks, M. F. Porterfield, L. P. Quenet, Martin Radford, E. E. H Sampson, Harold Stewart, Margaret E. Stewart, A. R. Thatcher, J. L. Thompson, D. P. Walther, D. U. Warburton, W. E. A. Watson, and R. A. E. Williams.

University of Cambridge

During June and July titles of degrees (B.Chir.) were conferred on C. M. Cavell, R. A. Kellgren, and D. J. Thompson.

University of London

At a meeting of the senate on July 18th it was resolved that university readerships in medicine, surgery, obstetrics and gynæcology, pathological chemistry, and bacteriology should be instituted at the British Postgraduate Medical School, Hammersmith. Particulars of these posts will be found in our advertisement columns.

Recipients of grants from the Thomas Smythe Hughes medical research fund and the Beaverbrook fund include Prof. C. A. Lovatt Evans, Dr. R. C. Lightwood, and Dr. T. W. Mimpriss. Applications are invited for the William Julius Mickle fellowship, which is awarded annually to the graduate of the university who has in the opinion of the senate done most to advance medical art or science within the preceding five years. Applications in proper form must be received by Oct. 1st, and particulars may be had from the academic registrar.

The Sharpey scholarship in physiology at University College has been awarded to Dr. D. H. Lee.

Dr. W. E. Roper Saunders, divisional medical officer for the London County Council, has obtained the diploma in public administration.

Fellowship of Medicine and Post-Graduate Medical Association

A lecture-demonstration on hysteria will be given by Dr. Clark-Kennedy at the Medical Society of London, 11, Chandos-street, Cavendish-square, W., at 2.30 P.M. on Tuesday, August 14th. On August 21st Dr. Clark-Kennedy will deal with asthma. Mr. Alan Gairdner will give a short course of demonstrations on the treatment of fractures at St. George-in-the-East Hospital, Raine-street, at 2.30 P.M., from August 13th to 17th. The course will include fractures of the upper extremity, fractures of the spine and pelvis, and fractures of the lower extremity. A course in infants' diseases which will deal principally with nutritional disorders and dietetics will be held at the Infants Hospital, Vincent-square, London, S.W., from Sept. 3rd–14th. Daily instruction in various branches of medicine and surgery is provided by the panel of teachers, and further particulars may be had from the secretary of the Fellowship, 1, Wimpole-street, London, W.1.

National Hospital, Queen-square

A course of lecture-demonstrations on neurology will be held at this hospital from Oct. 8th to Dec. 7th. It will include demonstrations of anatomy, physiology, and pathology, and demonstrations on post-mortem materia at 12 noon; lectures on the principles of neurology and on diseases of the nervous system at 3.30 P.M.; and demonstrations of clinical methods of examination at 5 P.M. A second course will be held from Jan. 28th to March 29th. Further particulars may be had from the secretary of the hospital, Queen-square, London, W.C.1.

Post-graduate Course in Newcastle

Under the auspices of the University of Durham College of Medicine, Newcastle-upon-Tyne, a post-graduate course will be held from Sept. 10th to 21st. There will be lectures and demonstrations daily from 9.30 A.M. to 4 P.M. from Mondays to Fridays, and they will all be given at the Royal Victoria Infirmary, except those on Monday, Tuesday, and Thursday afternoons, when visits will be paid to the Babies Hospital and Princess Mary Maternity Hospital. The programme of the course may be had from the registrar of the College.

Instruction for D.P.H.

The medical officer of health to the London County Council announces that a three months' course of lectures and demonstrations on clinical practice and in hospital administration will be given at the North-Western Hospital, Lawn-road, Hampstead, N.W., by Dr. A. Joe, the medical superintendent, on Mondays and Wednesdays at 9.30 A.M., and alternate Saturdays at a time to be arranged, beginning on Monday, Oct. 1st. A similar course will be given at the Brook Hospital, Shooter's Hill, Woolwich, S.E., by Dr. J. V. Armstrong, the medical superintendent, the dates and times being the same. Applications should be made to the medical officer of health, London County Council, Public Health Department (Special Hospitals), the County Hall, S.E.1.

Appointments

HENDERSON, ALEXANDER, M.B. St. And., D.P.H., has been appointed Assistant Medical Officer to the County of Aberdeen.

HERITAGE, KENNETH, M.S. Lond., F.R.C.S. Eng., Honorary Surgeon to the Saint John's Hospital, Lewisham.

MCCRAE, R. H. B., M.B. Glasg., Medical Referee under the Workmen's Compensation Act for Wick Sheriff Court District.

SHARPE, J., M.B. Glasg., D.P.H., Deputy Medical Officer of Health for Leeds.

WRIGHT, Prof. HEDLEY D., D.Sc., M.D., Bacteriologist for City of Liverpool.

Infants Hospital, London, S.W.—The following appointment are announced:—

FLETCHER, H. MORLEY, M.D. Camb., F.R.C.P. Lond., and STILL, G. F., M.D. Camb., F.R.C.P. Lond., Consulting Physicians;

ADDISON, O. L., M.B. Lond., F.R.C.S. Eng., and WAUGH, G. E., M.D. Lond., F.R.C.S. Eng., Consulting Surgeons.

Certifying Surgeons under the Factory and Workshop Acts: MCCLELLAND, T. A., M.B. Belf. (Warrington); MACFARLANE, E. P., M.B. Glasg. (East Kilbride, Lanark); MCLEAN, R., M.B. Glasg. (Carluke District, Lanark).

Vacancies

For further information refer to the advertisement columns

Altrincham General Hospital.—Sen. H.S. At rate of £150.

Birkenhead General Hospital.—Sen. H.S. At rate of £150. Also Second H.S., H.P., and Cas. O. Each at rate of £100.

Birkenhead Municipal Hospital.—Deputy Med. Supt. £450. Also Res. M.O. £300.

Birmingham, Ear and Throat Hospital.—Third H.S. At rate of £150.

Birmingham Royal Cripples' Hospital.—Res. H.S. At rate of £200.

Bradford, Grassington Sanatorium.—H.P. £175.

Bradford Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £150.

Buxton, Derbyshire, Devonshire Royal Hospital.—Asst. H.P. At rate of £150.

Cardiff, Glan Ely Tuberculosis Hospital, Fairwater.—Sen. M.O. £500. Two H.P.'s. Each at rate of £100.

Cardiff, King Edward VII. Welsh National Memorial Association. Three Asst. Tuber. O.'s. Each £250.

Carlisle, Cumberland Infirmary.—H.S. to Special Depts. At rate of £155.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—Clin. Asst. £250.

Charing Cross Hospital, W.C.—H.P. to Radiological Dept. At rate of £50.

Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.

Connaught Hospital, Walthamstow, E.—Sen. Res. M.O. At rate of £150.

Dudley, Guest Hospital.—Second H.S. £170.

East Ham Memorial Hospital, Shrewsbury road, E.—H.P. At rate of £150. Also Res. M.O. At rate of £200.

Exeter, Royal Devon and Exeter Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £150.

Finsbury Metropolitan Borough.—Asst. M.O.H. £600.

General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.

Great Yarmouth General Hospital.—H.S. £140.

Greenwich Metropolitan Borough.—Sen. Asst. M.O. for Maternity and Child Welfare Work. £600.

Guildford, Warren-road Hospital.—Res. Asst. M.O. At rate of £250.

Ilford, King George Hospital.—Pathologist. £500.

Institute of Ray Therapy, &c., 152 Camden-road, N.W.—Part-time M.O. At rate of £100.

Lincoln County Hospital.—H.S. At rate of £150.

Liverpool City.—Res. Asst. M.O. £200.

Liverpool, David Lewis Northern Hospital.—Cas. O. and H.S. At rate of £120 and £80 respectively.

Liverpool, Hahnemann Hospital, Hope-street.—Res. M.O. At rate of £125.

Liverpool, Royal Southern Hospital.—Res. Orthopædic H.S., M.O. to Spec. Dept., and Res. Anæsthetist. Each at rate of £60.

London Jewish Hospital, Stepney Green, E.—Hon. Clin. Assts.

London University.—University Readerships. Each £800. Also William Julius Mickle Fellowship. £200.

Maidstone, West Kent General Hospital.—H.P. £150.

Manchester, Ancoats Hospital.—H.S. At rate of £100. Also Surg. and Med. Reg. Each at rate of £50.

Manchester Babies Hospital, Burnage-lane, Levenshulme.—Sen. Res. Medical Officer. At rate of £125.

Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.

Manchester Centre, National Radium Commission Scheme.—Asst. Radium Reg. £400–£500.

Manchester, Christie Hospital and Holt Radium Institute, Withington.—Res. Surg. O. At rate of £150. Also Hon. Radiologist.

Manchester Royal Infirmary.—First Asst. for Clinical Laboratory. £350.

Manchester, St. Mary's Hospital.—Hon. Surgeon for Children's Dept.

Middlesbrough, North Riding Infirmary.—H.P. At rate of £125.

Middlesex Hospital, W.—Radiologist. £500. Also Asst. Radiologist (Diagnostic). £100.

Newcastle-upon-Tyne Eye Hospital.—Sen. Res. H.S. £300.

North Kensington Women's Welfare Centre, Telford-road, W.—Medical Officer.

Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £120. Also H.S. to Spec. Depts. £120.

Plymouth City Hospital.—Deputy Med. Supt. £450.

Plymouth City (General) Hospital.—Jun. Asst. M.O. £250.

Plymouth City and Port.—Asst. M.O.H. £500.

Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. O. £175.

Preston County Borough.—Asst. School M.O. £500.

Preston, County Mental Hospital, Whittingham.—Res. Jun. Asst. M.O. £500.

Preston and County of Lancaster Royal Infirmary.—Res. Surg. O. £300. Also H.S. and Cas. O. Each at rate of £150.

Preston, High Carley Sanatorium, near Ulverston.—Asst. Tuber. M.O. £450.

Queen Mary's Hospital for the East End, Stratford.—H.S. Also Cas. O. £150.

Reading, Royal Berkshire Hospital.—Res. Anæsthetist. At rate of £150.

Royal College of Physicians, Pall Mall East, S.W.—Milroy Lecturer.

Royal Eye Hospital, St. George's Circus, Southwark, S.E.—H.S. and Asst. H.S. At rate of £150 and £100 respectively.

Royal Naval Medical Service.—Ten M.O.'s.

Sheffield Children's Hospital.—H.P. At rate of £100. H.S. £100.

Shrewsbury, Royal Salop Infirmary.—Cas. O. and Res. Anæsthetist. At rate of £160.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Asst. H.P. £125.

Surrey County Council.—Asst. M.O. £600.

Swansea General and Eye Hospital.—Cas. O. At rate of £150.

Taunton and Somerset Hospital.—Hon. Physician.

Warwick, King Edward VII. Memorial Sanatorium, Hertford Hill.—Jun. Asst. M.O. £200.

Warwickshire and Coventry Joint Committee for Tuberculosis.—Asst. Tuber. O. £600.

Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.

Westminster Hospital, Broad Sanctuary, S.W.—Wander Scholarship in Diseases of Children. £250.

INDEX TO "THE LANCET," VOL. I., 1934

THE Index and Title-page to Vol. I., 1934, which was completed with the issue of June 30th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

NOTES, COMMENTS, AND ABSTRACTS

THE NEW PHILANTHROPY

ONE of the interesting things about human life is the way in which, from generation to generation, new ways are devised for tackling old problems. Poverty, illness, and social maladjustment are "always with us," and each new group of human beings which appears on earth contains some who feel a call to devote themselves to the problems which these human miseries create. In the philanthropic urge there seems to have been little change in all the ages; but the methods by which it finds expression have altered, and are still altering, from year to year.

At the beginning of the nineteenth century philanthropy was understood to be a matter of private virtue. By giving to the poor or the sick a man added to his own treasure in Heaven, and the only essential duty of the State in the matter was to prevent the destitute from being a danger or a nuisance to the rest of society. Early in the century, however, this conception began to change. Elizabeth Fry, Wilberforce, Shaftesbury, and the scores of other devoted men and women who spent their lives in active benevolence, brought into existence a sense of collective duty to the unfortunate, and this led to an almost bewildering outburst of philanthropic activity and organisation. Societies sprang up to assist every class of needy person, and the very multiplicity of these bodies led in turn to amalgamations and federations among them and ultimately to the Charity Organisation Society.

Simultaneously with this development of voluntary philanthropy there grew up the belief that the problems of poverty were insoluble by private benevolence alone, and that their causes, as well as their results, should be tackled. This, of course, led to a spate of social legislation, beginning with the Factory Acts and State Education, and developing into the complex structure of Public Health and Social Insurance under which we live to-day. Legislation inevitably led to inspection and enforcement, and thus the new philanthropy of the twentieth century finds itself based on a mixture of State and voluntary effort which is both far reaching and complex.

The ramifications of this present edifice of social service are lucidly set out in a new book by Miss Elizabeth Macadam,[1] which gives a very complete picture both of the actual organisation and of the field which is covered, and which will be an invaluable handbook to every social worker. From a logical point of view, no doubt, the method of our modern social service is absurd; and yet in reality, as all social workers know, it has some very good points. It enlists the help of thousands of able and devoted people, whose work and benevolence supplements the bare outlines of State assistance, and it enables "the human touch" to remain in philanthropy, while it prevents the overlapping and the contradictory judgments of uncontrolled private action. Moreover—and this is perhaps more important than all the rest—it allows for experiments and variations, and for that kind of practical research from which new ideas and new methods can emerge. The limitations and faults of the combined voluntary and State method are, however, clear enough, and the major one is incompleteness. As Miss Macadam shows, some parts o the country have developed a philanthropic technique which really does fairly well, but others are lamentably backward. This is a serious fault, and the same can be charged against the State efforts, not on a geographical but on a subject basis. The provisions for assisting unemployment in this country are efficient, and remarkably good as compared with other countries; but housing, which is desperately fundamental, is still absolutely deplorable. The health services, too, though they receive a great deal of thought and attention, suffer seriously from a lack of coördination, and are in some important respects still quite inadequate; and the problems of the mentally deficient and the mentally unstable seem still to baffle not only scientific research but also practical administration.

The whole field of social work is discussed in Miss Macadam's book, and the weak and the strong points are set forth with great impartiality, so that it is possible to estimate exactly what the position *is*. It is not so clear, however, what the position *ought to be*. Miss Macadam advocates the establishment of a Central Board of Charities to coöperate with a Consultative Board of Statutory Social Services, thus ensuring the complete organisation of both branches of modern philanthropy—first among themselves and then with each other; and she makes a good case for this proposal. The whole of her book, however, and the whole of the history of philanthropy, really set going wider trains of thought and raise doubts as to the justifications for the present structure of society itself. It is common form to-day in the world of social work to think more of preventive measures than of the mere patching up of failure. But even preventive work, as it is usually conceived, assumes the continuance of the conditions which make it necessary. There are philanthropists to-day who dig deeper down and who dream of a much more fundamental reorganisation of society. They do not call themselves philanthropists, but take political names; and as a rule their plans go no further than the wholesale destruction of the world we know. They cannot be ignored in an examination of modern philanthropic thought, for it may be that the future is with them. This is a dangerous and an unwelcome thought, but that is no reason for not looking it in the face!

[1] The New Philanthropy. By Elizabeth Macadam, M.A. London: George Allen and Unwin, Ltd. 1934. Pp. 320. 7s. 6d.

EUGENIC STERILISATION

IN this small volume,[1] No. 19 of a series whose list of previous contributors includes Sir Arthur Keith, Sir G. Elliot Smith, and Prof. Julian Huxley, Mrs. Hodson has presented, in clear language and without straining the available evidence, the case for legalised sterilisation of the unfit. She has paid visits to foreign countries in search of first-hand information and is able to cite methods and legislation now in vogue in those States which have accepted eugenic sterilisation. The chapters are intelligibly and concisely written, and should convey their message without confusion to any educated man or woman.

Such results as are to hand of sterilisation in institutions for mental disorder—figures as yet are rather meagre—are here recorded. The question of voluntary or compulsory legalised sterilisation in such institutions is touched upon. A succinct account is given in Chapter IX. of the recommendations embodied in the Brock report—recommendations which are, with certain safeguards, favourable to legalised sterilisation of mentally defective persons and also in the case of grave transmissible physical defect. In her last chapter Mrs. Hodson considers the question of eugenic sterilisation in its relations to philanthropic thought and ideals.

It is to be expected that in the near future medical men will be appealed to more and more by their patients and by social workers for information with regard to the inheritance of disease and the justification, in certain instances, for sterilisation of one or other of the partners to a marriage or prospective marriage. This volume provides an introduction to the problem which, though the author's bias is not concealed, will be generally held to be a fair one, and is, moreover, suitable for lay as well as medical readers.

[1] Human Sterilisation To-day. By Cora B. S. Hodson, F.L.S. The Forum Series. London: Watts and Co. 1934. Pp. 55. 1s.

SIR JAMES PALMER

REFERENCE to the Dr. Palmer who collected the scattered works and papers of John Hunter exactly a century ago has led to some discussion as to his identity and as to the form in which the collection

took shape. The publication, entitled the "Works of John Hunter," was published in four volumes with a quarto volume of plates. The first volume included Ottley's Life of Hunter, and the well-known surgical lectures which were taken down in shorthand on their delivery; the second volume includes the work on teeth and on venereal disease; the third volume comprises the pathological writings; and the fourth Hunter's Croonian lectures on muscular motion. Various distinguished men of science, notably Profs. Owen, Babington, and Charles Bell, contributed by comments and prefaces to the publication. Palmer's work was stimulated by the fact that, like Hunter, he was a St. George's man. He served as house surgeon to the hospital, and in 1834 failed in a contested election for the position of assistant surgeon. His edition of Hunter's writings came out in 1835, and during the following two years he held certain medical posts in London, but does not seem to have made any further attempt to obtain a place on the staff of St. George's Hospital. He migrated to Australia in 1837, on account of his wife's health; she was the daughter of John Gunning, the surgeon to St. George's, whose apprentice he had been. He practised first in Port Philip, but soon went to Melbourne and played an outstanding part in the development of the city. He was mayor in 1846, and laid the foundation-stone of the Melbourne Hospital, of which institution he was president until his death in 1871, but he ceased to practise medicine on becoming absorbed in public affairs. He was elected member for the city in the Australian House of Representatives, sitting in Sydney, and became Speaker of the Australian House of Commons. He was prominent in the formation of the Legislative Council of Australia, and became its first president. Neither his political nor his philanthropic duties occupied all his time—he was evidently an enterprising spirit—for he established a mineral waters factory and became a wealthy wine merchant. He was a grand-nephew of Sir Joshua Reynolds, whose admiration of Hunter is so well displayed in the sympathetic portrait possessed by the Royal College of Surgeons of England, and who left the bulk of his fortune to the daughter of his sister, Mrs. Frances Palmer.

NEW PREPARATIONS

GONOCOCCUS VACCINES A, B, AND C.—From Boots Pure Drug Co., Ltd., we have received samples of the vaccines prepared in the laboratory of the department for venereal diseases at St. Thomas's Hospital, London, and issued under licence by the Ministry of Health, being duly tested under the Therapeutic Substances Act. The vaccines are supplied in bulk by the hospital and filled into ampoules and vials in the laboratory of Boots Pure Drug Co., Ltd., each batch being tested before issue. Clinical evidence in favour of the treatment of simple gonorrhœa by vaccines is not wholly conclusive, or rather the extent to which local treatment can be dispensed with varies with the class of case. Vaccines have been found serviceable in three types: (A) a simple emulsion of gonococci to be used in doses of 10–125 million; (B) a detoxicated vaccine, when it is possible to inject with safety a dose 100 times larger; and (C) a mixed vaccine consisting of a simple emulsion of gonococci mixed with organisms commonly found in gonorrhœa complicated by secondary infection—here doses of 50–600 million can be employed. The manufacturers give the following practical information concerning the vaccines: "It should be noted that the strengths issued are in terms of millions per c.cm., so that any desired dose can be obtained by calculating the volume to be injected—i.e., to give a dose of 7500 million of gonococcus vaccine B, 0·75 c.cm. of the 10,000 million per c.cm. strength would be required; similarly to give 100 million gonococcus vaccine A, 0·5 c.cm. gonococcus vaccine A of the 200 million per c.cm. strength could be used. For a dose of 10 million extract 0·1 c.cm. of the 200 million per c.cm. strength, the syringe should be filled up to the 1 c.cm. mark with boiled water, and 0·5 c.cm. of the dilution be given."

HEPAMULT (H. R. Napp, Ltd., 3 and 4, Clement's Inn, Kingsway, London, W.C.) contains the active principles of fresh liver in a form of easy administration. Its employment is claimed to be particularly economical, treatment costing in average cases not more than 6*d*. a day on the basis of 10 g. daily, this being the equivalent of 8 oz. of liver. The preparation is supplied in dry granules which are placed upon the tongue and washed down with an adequate quantity of water. The granules should not be chewed and the daily dose is preferably taken at one time, that time being for choice after a light meal. The measure enclosed with the preparation is standardised to hold 10 g.

A DISCLAIMER

Prof. Grey Turner writes: "In a newspaper called the *Sunday Sun*, for August 5th, which has a considerable circulation in the north of England, an account appeared of a case on which I have recently operated at the Newcastle-upon-Tyne Royal Infirmary. Under an arresting title misleading statements were made concerning the operation, and my name was mentioned in a way to which I very much object. Needless to say I knew nothing whatever about the report, nor did I give any information to the newspaper authorities, nor have they obtained information from the Newcastle-upon-Tyne Infirmary. It has unfortunately become not uncommon in this district for the more sensational papers to write up accounts of cases of which they have heard, and this is the third occasion I have been the victim of unpleasant publicity during the last twelve months. On a previous occasion I had an interview with the Editor, and as a consequence he published a small paragraph in an out-of-the-way part of the paper disclaiming my connexion with the article in question, but evidently they find the practice provides too 'good copy' to be discontinued."

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, August 13th, to SATURDAY, August 18th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, Lecture-Demonstration by Dr. A. E. Clark-Kennedy, at 2.30 P.M. on Tues., on "Hysteria."—ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, E. Demonstrations on the Treatment of Fractures, at 2.30 P.M.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship of Medicine.—Courses of instruction, clinics, &c., arranged by the Fellowship of Medicine are open only to Members and Associates.

Births, Marriages, and Deaths

BIRTHS

BENNETT.—On July 25th, at Wilmslow, the wife of Dr. Randle Bennett, of a son.

MANNINGTON.—On August 3rd, at "The Leaside," Muswell Hill, the wife of Hugh Mannington, M.B., of Rye, of a daughter.

DEATHS

BARCLAY.—On August 3rd, at St. Leonards-on-Sea, Andrew Aitken Barclay, M.B. Glasg.

GARVIE.—On July 24th, at The Chantry, Bideford, N. Devon, Col. John Garvie, late I.M.S.

GIBSON.—On August 5th, at a nursing-home in Norwich, Tom Gibson, M.R.C.S., of Shipdham, Norfolk, aged 54 years.

LAWS.—On August 6th, at a nursing-home in London, of peritonitis, Robert Laws, C.M.G., M.D., D.D., of Livingstonia, Nyasaland, Central Africa, in his 84th year.

WILSON.—On July 30th, at Ketton, Geoffrey Plumpton Wilson, M.R.C.S.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.